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20 April 1984

Worldwide Report

NUCLEAR DEVELOPMENT AND PROLIFERATION

FBIS

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20 April 1984

WORLDWIDE REPORT

NUCLEAR DEVELOPMENT AND PROLIFERATION

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'LEAKED' DOCUMENT FAVORS DEVELOPMENT OF NUCLEAR WEAPONS

May Fuel ALP Nuclear Policy Debate

BK300033 Hong Kong AFP in English 0222 GMT 30 Mar 84

[Text] Canberra, March 30 (AFP) -- A secret government document leaked to the press today said that the ANZUS defence treaty with the United States and New Zealand was not likely to be of use to Australia in the potentially troublesome situation of a conflict with Indonesia.

The defence planning document treated Indonesia as the only serious threat to Australia even though it acknowledged that the threat was a remote one. The document said that in any conflict with Indonesia, Australia might have to surrender the Cocoa and Christmas Islands and some parts of the Australian coastline. In an effort to reduce any potential Indonesian threat to Papua New Guinea, the "strategic basis" study recommended that Australia should encourage the government in Port Moresby to "suppress" West Irian rebels.

The secret document endorsed by the cabinet at a meeting in Perth last September was published by the weekly NATIONAL TIMES. The disclosures resulted in immediate calls by the parliamentary opposition for the resignation of Defence Minister Gordon Scholes.

The document said that Australia should oppose United States pressure for significant increases in Japanese defence spending and asserted that a U.S. presence in the Pacific region was more potentially benign than a larger Japanese military role. The study said that Australia should be in a position to develop nuclear weapons as quickly as any neighbour that looked like doing so.

A large section of the ruling Australian Labor Party (ALP) is deeply committed to opposing nuclear weapons and even uranium mining in Australia. Observers said the recommendation on nuclear weapons would fuel fresh controversy within the ALP before the party's general conference in July.

The document warned that the Soviet Union had nuclear superiority over the United States. It would be prudent to assume that U.S. bases in Australia were nuclear targets.

On the potential threat from Indonesia the document said that any attempt to counteract an Indonesian attack across the Papua New Guinea border would be assisted by the establishment of a Royal Australian Air Force (RAAF) fighter base on Cape York Peninsula. A full-scale Indonesian invasion of Australia was not likely to succeed, it said.

Nuclear Weapons Plans Denied

BK300544 Melbourne Overseas Service in English 0430 GMT 30 Mar 84

[Text] The Australian Government has refused to confirm or deny the accuracy of an article about a secret defense document which has been published in a weekly newspaper. However, it is going to investigate the alleged leaking of the document which reports the details of strategic basis of Australia's defense policy.

The NATIONAL TIMES article, based on what it claims is a cabinet document, says the government believes Australia should acquire the capacity to develop nuclear weapons as quickly as any of its neighbors; that Indonesia is the only serious threat to Australia; that the ANZUS treaty between Australia, New Zealand, and the United States would be worthless in any conflict with Indonesia; and that Australia should encourage Papua New Guinea to suppress rebels from Irian Jaya to reduce the potential Indonesian threat to Papua New Guinea.

Both the defense minister, Mr Scholes, and the attorney general, Senator Evans, have said it was not a policy document. Both ministers admitted the existence of such a document, but said it was a set of guidelines on which consideration of defense policy would take place. Senator Evans said the cabinet had not endorsed any specific items mentioned in the document.

The defense minister, Mr Scholes, said the government had a policy of opposition to nuclear weapons and stressed there were no plans to develop nuclear weapons. Mr Scholes said the article had damaged Australia's security operations and could cause damage to relations with neighboring countries.

The federal opposition has reacted to the NATIONAL TIMES story by expressing concern at what it called the most damaging revelation in the national history. It (?has) called for the resignation of Mr Scholes and has moved a censure motion against him in parliament for this matter and a range of other defense issues.

CSO: 5100/4363

AUSTRALIA

BRIEFS

NUCLEAR INDUSTRY PREVENTION--The leader of the Australian Democrats, Senator Chipp, has introduced legislation into the Senate to prevent a nuclear industry being introduced into Australia. Senator Chipp said the bill prohibiting the importation of nuclear hardware was the only way to guarantee that Australia would never be able to develop nuclear weapons. Calling on government and opposition senators to support the legislation, the Democrats' parliamentary leader claimed that its passage would make Australia a working example of a nonnuclear nation. Senator Chipp said that Australia would then be making its greatest contribution to nuclear nonproliferation. Radio Australia's Canberra correspondent says that the Democrats feel it is almost certain to fail because although there are many government senators opposed to nuclear development, it is not government policy to possess a nuclear deterrent. [Text] [BK040653 Melbourne Overseas Service in English 0430 GMT 4 Apr 84]

CSO: 5100/4364

PEOPLE'S REPUBLIC OF CHINA

PRC, PAKISTAN ACCUSED OF NUCLEAR TESTING

OW281755 Beijing XINHUA in English 1442 GMT 28 Mar 84

[Text] Islamabad, March 27 (XINHUA) -- Pakistan today denied the Indian statement that "Pakistan has manufactured an atomic bomb and China may have helped it to explode its first underground nuclear device."

A spokesman of the Pakistani Foreign Office here described as "untrue" the statement made by the Indian foreign secretary yesterday.

On Indian press reports of the secretary's further statement that the Pakistani foreign minister had attended a two-day meeting of nuclear experts at the A-bomb test site in China, the spokesman said: "This allegation too, is totally false and groundless."

"The Government of Pakistan is committed to a policy of using atomic energy exclusively for peaceful purposes. It is opposed to the proliferation of nuclear weapons and has put forward a number of concrete and feasible proposals for the establishment of a nuclear weapons-free region, particularly in South Asia," the spokesman added.

CSO: 5100/4120

BRIEFS

FAST BREEDER REACTOR RESEARCH--Kunming report: Jiang Shengjie, a well-known nuclear energy expert in China, said at a recent meeting: China is actively doing research on fast breeder reactors and is striving to build an experimental fast breeder reactor in the near future, as technological preparation for building commercial fast breeder nuclear power plants in the next century. Jiang Shengjie said: After some 30 years of effort, China has formed a fairly complete nuclear fuel cycle, including uranium prospecting, mining, chemical transformation, enrichment and fuel element making, reactor technology, after processing, and radioactive waste disposal. We will develop our nuclear power technology by combining international exchanges and cooperation with domestic scientific research. [Text] [OW241223 Beijing in Mandarin to Taiwan 0400 GMT 23 Mar 84]

CSO: 5100/4118

NO SOLUTION SEEN TO NUCLEAR WASTE STORAGE

Manila BULLETIN TODAY in English 22 Feb 84 pp 1, 8

[Article by Ray S. Eñano]

[Text] Energy Minister Geronimo Z. Velasco said yesterday that storing nuclear waste from the \$2.1-billion nuclear power plant remains a problem since no permanent dumping site has been designated.

With the country's only nuclear plant nearing completion in Morong, authorities face a blank wall in locating a repository that will temporarily store nuclear wastes.

An inter-agency committee headed by the Philippine Atomic Energy Commission (PAEC) has not decided where the radioactive wastes would be dumped.

The committee, officials of the National Power Corp. (NPC) said, has been looking all over the Philippines for a five-hectare site for the waste disposal. Officials said the committee has considered either Bataan, Mindoro, or Palawan but no decision has been made.

Velasco said there would have to be an international convention concerning the matter of a permanent dumping site. He said the problem lies on who will administer the site since the deadly wastes could be recycled into nuclear weapons.

Initially, an interim "radwaste" building is being constructed near the Bataan nuclear plant.

CSO: 5100/4360

ARGENTINA

CNEA'S INFLUENTIAL ROLE IN DOMESTIC, FOREIGN ISSUES QUESTIONED

Buenos Aires LA PRENSA in Spanish 21, 22 Mar 84

[Two-part article by Enrique Zaldivar: "The CNEA and Its Function"]

[21 Mar 84 p 7]

[Text] Argentina's Nuclear Power Situation

The following article is merely a brief look at how Argentina stands domestically and internationally in the area of nuclear power in early 1984.

Because this article is merely informational and of necessarily limited length, it is not possible for me to delve deeply into each aspect of the issue, even though it warrants such treatment because of its far-reaching importance for the country's future. I will leave this job for another occasion and limit myself to outlining Argentina's domestic and international situation in the field of atomic energy.

Scarcity of News

Throughout its three decades of existence the CNEA [National Commission for Atomic Energy] has pursued a policy of keeping most of its projects and activities confidential or, if you wish, of furnishing information about them reluctantly. Therefore, the Argentine people are unaware of what this government agency is doing, why it is doing it, the usefulness of its activities, how much they cost and what the outlook for them is.

This policy, which is unacceptable today, combined with the whirlwind of events in the republic since last October, has caused the major gains that our country has achieved through patient efforts in uranium 235 technology to go more or less unnoticed among the populace. These gains enable Argentina today to run through, on its own, the complete nuclear fuel cycle, with its wide range of implications.

The community and even unofficial circles with links to Argentina's nuclear research and industry do not know to what degree or level or on what scale these gains have been pursued. The only information

so far has been a far from enlightening report from the commission's former chairman (enrichment through gaseous diffusion) in early November 1983; since then there has been total silence. I am not implying that the commission should have widely publicized a technology that cost millions of dollars (how many?) and required wideranging studies and testing to resolve complex problems. The information that his report furnished, however, was exceedingly scant, and we do not know how beneficial the CNEA authorities expect this development to be to the country

Some Background

As of 1976 the CNEA was forced to intensify its research into enriched uranium technology, inasmuch as the United States had refused to sell it the fuel for the domestic reactor that produces radioisotopes for the country and then for the reactor installed under the cooperation agreement with Peru. Shortly thereafter, certain irregularities or errors were discovered in the accounting of the enriched uranium that the CNEA had purchased, and they enabled the Ezeiza RA3 to continue functioning. But the crisis over the supplies of this fuel forced the commission to buy further fuel from the Soviet Union, which prompted some opposition in the Western countries.

Concurrently, following guidelines that had been in force for some 20 years, a group of CNEA scientists and technicians succeeded in completing the nuclear fuel cycle and thus obtaining enriched uranium. This took place at a remote spot in the province of Rio Negro.

The above is but a very terse summary of the tenacious, praiseworthy efforts that made this spectacular success possible.

I think that it is only fair now to lift the veil of secrecy that has concealed most CNEA activities. As regards the breakthrough discussed in previous paragraphs, at least the names of the people involved in the research, if not the details thereof, ought to have been made public. They deserve the homage of all Argentines because they have made our country one of the leaders in obtaining and utilizing nuclear power and have opened up an enormous range of technological opportunities.

International Impact

Argentina's technological breakthrough has indirectly given our republic an international bargaining power that it previously lacked. And this applies to other areas, not just nuclear power. We can assume that the Foreign Ministry has taken this factor into due consideration. Let us hope that the government will make prudent, firm and suitable use of it.

I doubt, however, that much thought has been given in any circle in Argentina (even in the government) as to how this potentially temporary leadership can be asserted in Latin America or in relations with the

Third World, which are so gratifying to our government leaders, and as to how we can capitalize on the new situation.

Reorganization and Control by Congress

As I noted above, most Argentines have always been uninformed about issues relating to nuclear power. This is one of the criticisms that should be voiced against the three decades of military administration in the nuclear field: the failure to inform the populace in general about what was being done or at least what was being attempted and for what purpose.

Few people know that for some years now the CNEA has been extracting uranium from ore, that it later purifies it to the necessary extent to make oxides (which it exports), that the country has a plant for manufacturing nuclear fuel, that a plant to process the fuel is being built, etc.

One result of this confidentiality is that there is no consensus (not even in high-level government circles) on the direction that the country's nuclear activities ought to take, even though there is a vague realization that the prospects are optimal

I therefore offer the following suggestions:

1. First of all, I feel that given the great progress we have made, scientific research and technological studies on nuclear power should under no circumstances be halted. What is more, they should be intensified (We are among the world leaders in something constructive!), even if this entails a reassessment and streamlining of CNEA activities and goals.

Thus, we must develop our fledgling uranium mining industry, as well as intensify the prospecting and mining of other ores needed for nuclear activity; step up research; prudently plan the installation of electricity-production reactors; if necessary, produce more radioisotopes for use in medicine, agriculture and industry, etc

Extreme caution should be observed in undertaking power reactor projects. For the moment the country has other better tested and less expensive sources of energy (hydroelectric, gas, oil, etc). Moreover, the snags that much more technologically advanced countries have encountered should teach us a lesson. Between 1974 and 1982 in the United States, construction was halted at relatively advanced stages on 100 reactors because of technical and safety problems. The completion of the nuclear power plant at Marble Hill, Indiana had to be called off recently after almost \$2.5 billion had been invested in it. There are many examples of failures in this field.

2. Any idea of direct or indirect military use should be ruled out. It makes no sense for the Argentina of the 1980's to manufacture an

atomic bomb Where, against whom and for what purpose would it be used? What good would it do the country to have one, two or three nuclear-powered submarines?

It would seem pointless to expand on these arguments Fortunately, the Executive Branch has given assurances that this is its policy (statements in December 1983 and January, February 1984).

3. By coincidence (there are no good technical or even administrative reasons for it) all of the nation's nuclear power activities (mining, research, technology, choice and operation of reactors, etc, even international relations) have been directed or at least supervised by the navy For more than 30 years, up to November 1983, the chairmen of the CNEA were, without exception, superior navy officers

Absence of Other Agencies

Other government agencies with interests in this field have been and are being prevented from taking part in discussions, planning and decision-making on issues relating to the applications of atomic energy that affect the entire community Universities have been allowed little involvement, only what the CNEA will permit (the University of Cuyo-Bariloche Institute of Physics), and the same is true of the Energy Secretariat, which was prohibited from getting involved in nuclear power production

Even the manner in which the Foreign Ministry has represented the country in international nuclear agencies has been decisively influenced by the opinions of the CNEA chairman It was the CNEA that decided whether or not to sign international treaties or agreements on the uses of nuclear energy (Convention on Civil Liability for Nuclear Damage, the Nonproliferation Treaty, the Tlatelolco Treaty, cooperation pacts with other countries, etc, etc).

The provinces are mere spectators when the commission decides to do something within their borders, and the CNEA views private industry as a far from trustworthy competitor.

I do not mean to imply with all this that the manner in which the commission has been run, much less the results of its efforts, has always been negative. The boost that it was given under Quihillalt (1956-1973) will no doubt be held in high regard in history books and can be considered the root of the success that we have now achieved.

But such a system is temporary and is not in keeping with republican institutions. It is a political and administrative system such as the one that has been promised to us and that Argentines seem willing to have. The organization and autonomy that the CNEA has had for 30 years cannot and must not continue.

[22 Mar 84 p 7]

[Text] The Acceptance of the Tlatelolco Treaty

It might or might not remain directly under the Executive Branch, but it seems that Congress must be given direct control immediately through a joint, two-house committee, as was done in the United States. Congress would thus approve the organization, policies and, of course, the budget of what has until now been a uniquely autonomous government agency

As far as its internal structure is concerned, its chairman ought to be a civilian (as has now been decided) but one who is a specialist in the many aspects of the nuclear issue (I want to emphasize this) He should be assisted by directors who are also specialists, and for the time being at least the presence of members of the Armed Forces seems counterproductive here

Not to be excluded from the administration of the commission are its scientific and technical officials, some of whom enjoy great prestige overseas but are practically unknown here at home.

Through various state-run enterprises (Law No 20,705) the CNEA has embarked unsuccessfully on business deals and transactions that are properly the province of private companies, which it has monopolistically excluded.

Its involvement should be curtailed in areas that can be handled by private parties, who have been practically locked out until now by its monopoly. This policy must be revised in depth, and although the government should retain control, private activity ought not to be paralyzed. Spain is the best example of the arrangement that I am advocating.

Our Supremacy in Latin America

The third question (how to assert our current and possibly temporary supremacy within Latin America in this field) is exceedingly difficult to answer, all the more so because a wrong move could spoil a unique opportunity

The nations of Latin America and, in general, the countries that belong to the "Group of 77" need nuclear technology, and our country could offer it, especially to the former, under bilateral or multilateral agreements.

We should not lose sight of the fact, however, that in order for Argentina to continue making progress in this field, it must receive technology from the more advanced countries.

As I pointed out at the Sixth Congress of the International Nuclear Law Association in San Francisco in September 1983, progress in the developing countries depends above all on general technology transfers from the developed countries. But if there are countless legal and financial problems involved in this transfer, they are even more severe in the case of atomic energy. We can assume, moreover, for a series of reasons that I cannot go into here, that the more developed nations will take an even harder-line stand in the near future. Therefore, we need to urgently study and clear up our future relations in the nuclear field with the United States, France, the FRG, Canada, etc.

In considering a strategy to assert our status in Latin America and to secure technology from the more advanced countries, we should not overlook that Argentina is still suffering from international discredit and that we are even now viewed with suspicion. Seven years of accusations about human rights violations and the Malvinas issue (which caused problems for certain powers and brought tragedy to our country) are for now negative factors in our foreign relations.

The passage of time will undoubtedly mitigate this discredit. But the government must take positive steps to reinstall the republic in the place that it should have never lost within the concert of nations that boast of their mutual respect (even if in practice they do not always show it), to act in accordance with the resolutions of the United Nations and its agencies and to abide by international agreements.

International Treaties

We then have the thorny problem of certain specific nuclear agreements: the Nonproliferation and Tlatelolco treaties

Our authorities (read the CNEA) rejected the former, arguing simplistically that it was "discriminatory." They seemed to be overlooking that every treaty is negotiable and that appreciable advantages can be gained in exchange for circumstantial concessions. Furthermore, what international treaty does not entail some degree of discrimination imposed by the dominant party?

I do not mean to say by this that we should now reconsider our rejection of the Nonproliferation Treaty. The current government has taken a stand and should stick to it, especially since this treaty is being revised, and a new text will presumably be put forth in 1985. When that time comes, we should study it without inferiority complexes.

As far as the Tlatelolco Treaty is concerned, there is no reason whatsoever not to sign it. I read the following in an interesting article (whose conclusions I share) by Monica Pinto, a professor of international public law at the University of Buenos Aires, that was published in a journal on 16 December 1983: "Tlatelolco is a remarkable legal instrument for many reasons. The treaty itself is important not only because

it seeks to preserve peace by making Latin America the first denuclearized or nuclear-weapons-free inhabited zone in the world, but also, concomitantly, because it strives for progress by encouraging the peaceful use of nuclear power to further the development and well-being of the region's people's."

Those who advocate and emphatically announce its rejection should perhaps be asked whether they have read the treaty text and weighed the advantages that signing it could entail.

It might even help achieve better results than have apparently been obtained so far in discussions of the Malvinas issue.

8743

CSO: 5100/2081

ARGENTINA

CANADA TO REEVALUATE ITS ASSISTANCE TO NUCLEAR PROGRAM

Buenos Aires LA NACION in Spanish 22 Mar 84 p 1

[Text] On departing the country yesterday after an official 2-day visit, the Canadian assistant deputy minister for Latin America and the Caribbean said that Argentina ought to review its independent nuclear program, in which Canada was an active components supplier, in light of international regulations in this field and "accede to existing treaties."

Mr Claude Charland added: "We are prepared to continue lending our assistance to Argentina's nuclear program, but Argentina must accept the positions being upheld in this regard "

According to the DYN agency, Charland described Argentine-Canadian trade prospects as very attractive but said that potential agreements in this area depended on local authorities reaching an understanding with the International Monetary Fund.

He emphasized that he had received very attractive offers for investments in Argentina. "Your authorities offered us the chance to outfit a hydroelectric power plant and other projects, but the government must first hammer out an agreement with the IMF before these opportunities can be looked into."

Joint Communique

Shortly before his departure, the Foreign Ministry made public a joint communique mentioning Mr Charland's activities in Argentina and noting that the dialogue between the two countries had been revived in the wake of the democratization process begun on 10 December, a process "based on values and principles shared by the Canadian people "

The communique says that the two governments wish to keep up a dialogue "in the spheres of energy, transportation and mining development, which will serve as a framework for a revitalized process of bilateral consultations "

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CSO: 5100/2081

BRIBERY LINKED TO NUCLEAR REACTOR SALE NEGOTIATION

Rio Tercero Contract Involved

Buenos Aires LA PRENSA in Spanish 8 Mar 84 p 4

[Text] During the brief period of time that has elapsed since the establishment of the present government, there have been many official announcements and proposals submitted in the National Congress containing references to presumed irregularities committed during the previous administration. In all instances, an attempt is being made to achieve clarification of the actions or incidents in question, from which one infers a commendable concern.

Nevertheless, one is struck by the fact that, in undertaking this useful and necessary task, special attention is being given to situations which, at the time, did not comprise obvious crimes or irregularities, while the consideration of others which did, indeed, assume such features, is being postponed.

Before reopening the investigation associated with the Italo-Argentine Electricity company, based on doubts that may be corroborated or not, it would have been fitting to insist upon an explanation for a proven act of bribery such as the one that occurred during the last Peronist administration and that was directly related to a contract signed on 7 March 1974, for the construction and installation of an atomic reactor at Rio Tercero, in Cordoba Province. We think that this act of bribery should have had priority attention from the National Controller's Office of Administrative Investigations, both because of the magnitude of the interests at stake and the international repercussions that it has had, to the detriment of the country's reputation.

No one will have forgotten that officials of the Argentine Government signed that contract with the firms Atomic Energy of Canada Limited (AELC) and Italimpianti, jointly, which were to be responsible for the construction and installation of the reactor. No irregularity would have been noticed regarding the transaction if a study had not been made in the Canadian House of Commons of illegal payments to "agents" who participated in the operation. That House's Standing Committee on Accounts reached the conclusion that "illegal and fraudulent" payments had been made to the presumed agents. The president of the Canadian firm claimed not to know the type of services rendered by the individuals who received the commissions, but the director of Italimpianti admitted that he had resorted to

the services of a commercial agent to whom the other company was supposed to pay half of the "fees" agreed upon, which represented \$5 million in all. The Canadian company noted that only Italimpianti knew about the procedure for paying the "commission," but on 8 April 1974 it issued check No 1/50,140,123, for \$2,414,500, drawn on the Royal Bank of Canada.

We shall omit many other details connected with this notorious and unfortunate incident, which prompted the intervention of the Controller's Office of Administrative Investigations in our country. The fact is that it was never established who the influential persons were who received the bribe in question from the aforementioned companies. The contract was renegotiated in 1980 under ominous conditions, as we stated in our editorial commentaries on 5 and 16 September of that year.

Only the firm Italimpianti is in a position to report which person or persons collected the \$5 million stipulated for favoring the transaction.

A decade has elapsed since the date on which the contract was signed (7 March 1974). The cordial relations that the present Argentine Government has with that of Italy make the reopening of an investigation which should never have been interrupted propitious.

National Controller's Office Responds

Buenos Aires LA PRENSA in Spanish 14 Mar 84 p 5

[Text] In connection with the editorial entitled "Bribery Not Explained," which we published in our edition of 8 March, the National Controller's Office of Administrative Investigations released a communique, the pertinent section of which reads as follows:

"On 18 October 1977, the National Controller's Office produced a decision in case No 1421, wherein there was arranged an investigation relating to the irregular payment of the sum of 5 million U.S. dollars during the course of the operation concluded between the National Atomic Energy Commission and the companies AECL (a corporation of the Canadian Government) and Italimpianti, S.P.A. (an enterprise of the Italian state group IRI [Industrial Reconstruction Institute]), for the construction and installation of a nuclear powerplant at Embalse Río Tercero, Cordoba Province.

"The exhaustive investigation that was conducted established the irregular payment of that sum which, according to official reports provided by the Italian firm, was made to two 'commercial agents' and was deposited in an account numbered or coded 'OPERA' in the Trade Development Bank of the city of Geneva.

"In view of Italimpianti's refusal to provide the names of the presumed 'commercial agents' and the impossibility of bridging the insurmountable obstacle of Swiss banking secrecy (a circumstance already noted by the newspaper LA PRENSA in its editorial of 5 September 1980, entitled 'Inexplicable Negotiation'), and

in view of the fact that the acts attested to by the investigation, the Controller's Office, presuming the existence of fraud, reported the incidents to the Federal Justice system, by means of the decision cited at the beginning of this communique.

"The court case in which this Controller's Office took public action is under way, and to date the justice system has met with the same difficulties relating to the procurement of the evidence; hence, thus far, despite the repeated and persistent inquiries made not only by the court but also by this Controller's Office of the foreign authorities, by way of the Ministry of Foreign Relations and Worship, there has been no success in identifying individually the presumed 'commercial agents' who benefited from the aforementioned payment.

"The Controller's Office has given priority, constant attention to this case, which it deems essential to clarify, and it has had the complete cooperation of the authorities in the National Atomic Energy Commission."

It states in conclusion: "At the present time, concrete inquiries are being made of the Swiss authorities which, according to records in the possession of this Controller's Office and the Federal Court taking part in the case, will afford the contribution of evidence that will lead to the clarification of the case."

2909

CSO: 5100/2080

BRIEFS

CNEA APPOINTMENTS--The head of the National Commission for Atomic Energy [CNEA], engineer Alberto R. Costantini, has appointed engineers Norberto Oscar Japas and Carlos Alberto Rinaldi as consultants to the institution. He also assigned engineer Alberto Rafael Costantini, Jr, as coordinator between the CNEA president's office and the various departments thereof. [Text] [Buenos Aires LA PRENSA in Spanish 14 Mar 84 p 4] 2909

CSO: 5100/2080

FLIGHT OF TECHNICIANS THREATENS USP RESEARCH ACTIVITIES

Sao Paulo FOLHA DE SAO PAULO in Portuguese 26 Feb 84 p 26

[Article by Elisa Wolynech, physicist, assistant professor at the Physics Institute of the University of Sao Paulo and coordinator of the Linear Accelerator Laboratory]

[Text] The University of Sao Paulo [USP], which is responsible for two thirds of the nation's scientific output, runs the risk of having its most important laboratories idled because of the flight of technical support personnel for the research. Scientific and technological development requires not only scientists and researchers but also technical personnel to build the equipment needed for the planned experiments.

The table indicates the job descriptions of the support technicians and their respective salaries. The duties and functions now listed for technical support personnel are totally inadequate to the needs, given that they are static in structure and do not allow for any real career advancement. In addition to this obsolete structure, the most serious problem at the moment is the technicians' low pay, incompatible with the quality of their services and offsetting all the possible and necessary incentives to reward the quality and the development of their technical skills. This situation has worsened in recent years, because the salary increases have been far below the inflation rates, culminating in the ridiculous wage readjustment of 50 percent [of the inflation rate], granted by the state government in January.

Table: Salaries for Research Support Technical Personnel

<u>Function</u>	<u>Wage (in cruzeiros)</u>
Lab Assistant	115,000.00
Lab Technician	115,000.00
Mechanic	115,000.00
Electronics Technician	131,765.00
[Experiment] Preparer	185,415.00

The Third Basic Plan for Scientific and Technological Development states in its first chapter that the nation's ability to overcome its domestic and foreign problems is closely linked to our scientific and technological development. Obviously, this development requires, among other things, a qualified technical infrastructure, guaranteeing satisfactory conditions for research. In Chapter 4, devoted to scientific development and manpower training, the document states the need for adequate wages for researchers and technical personnel as one of the prerequisites for the institutional stability that will give continuity to the nation's scientific programs.

To describe the type of activity in a research laboratory, I will cite some examples from the Linear Accelerator Laboratory where I am employed. Our accelerator is the only one of its kind in the country, and research in nuclear physics is conducted at this laboratory. We play an important role in manpower training. Projects conducted at the laboratory have resulted in 24 master's theses, 7 doctoral dissertations and 4 independent theses. We currently have 22 post-graduate students working on their theses at the laboratory. The accelerator recently had its power doubled, and the parts and electronic equipment were built by our technical personnel. Construction of these parts requires precision mechanics. How can a technician who performs refined mechanical work be maintained on a salary of 115,000 cruzeiros? (This is the wage scale established by the state government.) To maintain the accelerator, we need electronics technicians. It takes at least a year of training in our laboratory to produce a fine electronics technician capable of performing these tasks. How can we keep this skilled technician on a wage of 131,756 cruzeiros? In the experiments which we conduct, the measurements taken by detectors are stored in a computer, and our technicians build the electronic equipment which links these systems to the computer, to cite just one of their many activities. This requires creativity, as well as a knowledge of advanced electronics. How can we attract technicians who meet these requirements when the maximum salary for a technician is 185,415 cruzeiros? The examples cited above are typical of what goes on in all the research centers of the USP.

Some years ago, the salaries paid to the technicians were such that we could only hire apprentices. They used our laboratories as a training ground to obtain better jobs in industry. At that time the researchers were importing the more sophisticated equipment needed for their research, to the detriment of the development of national equipment. Under the present circumstances, this is no longer possible and it is extremely important to develop national instrumentation. Meanwhile, without technical support personnel to build and maintain the equipment used in our research, scientific and technological development is impossible. With the last wage adjustment by the state government, despite the unemployment crisis in Brazil, we cannot even hire inexperienced technicians at the salaries paid by the USP.

To cite some other examples, the Department of Nuclear Physics of the Physics Institute has lost 8 technicians in the last 2 months. The Linear Accelerator Laboratory is about to lose the technician responsible for the electronics shop, the technician responsible for the maintenance and operation of the accelerator and one of the accelerator operators, which seriously threatens the continuation of the research. The quality of these technicians may be measured by the offers which they have received from industry: salaries averaging three times as much

as those paid by the USP. This factor of three gives us a measure of the wage discrepancy.

What does the lack of technical support for research mean? Statistics gathered by the Brazilian Association for Scientific Progress (SBPC) and the National Council for Scientific and Technological Development (CNPq) indicate that an increasing number of researchers are devoting themselves to theoretical studies, with a sharp decline in experimental research, to the detriment of the development of Brazilian technology.

The Table I salaries create an extremely serious problem for the USP at this time. The government of Sao Paulo State has declared on several occasions that the university is a priority. This administration must immediately review and revise the occupation status of research support technical personnel, creating the incentive and the possibility of career advancement and paying wages consistent with the job performed. If these measures are not adopted immediately, the USP, in its 50th year, is in danger of having most of its research laboratories idled.

Studies to restructure the occupational status of research support technicians already exist. The problem does not affect the USP alone, but all the research institutions in the state.

On 28 October 1983, the APqC (Sao Paulo Association of Scientific Researchers) sent a proposal to the government for a Support System for Scientific Research in Sao Paulo State. This proposal was based on a study conducted by the SBPC on the problem of the occupational status of technical personnel in support to scientific research at research institutions and universities.

The SBPC formed a commission which, after 3 and 1/2 years of studies, forwarded a draft bill to the Secretariat of the Administration in the Paulo Egidio government. The draft bill was widely disseminated and discussed in a dozen meetings conducted in various institutions in the capital and Campinas, and was approved by the universities in Sao Paulo, the Permanent Commission on Full Time Service and the APqC.

There is already a draft bill for the creation of a support system for research. This bill is aimed not only at eliminating the severe wage discrepancy in relation to private enterprise, but also at reducing down time, fostering technical excellence and reducing turnover, thus insuring the stability and quality of the support staff, optimizing the activity of its personnel and offering incentives for individual self-improvement by presenting broad prospects for advancement in truly attractive and highly selective careers. Urgent measures are required of the state government. A salary of 115,000 cruzieros is adequate for dishwashers, janitors and messengers--in short, for unskilled labor. Is it adequate for skilled manpower?

BRAZIL

CTA HEAD: CONTROL OF NUCLEAR FUSION IN 5 YEARS

PY271623 Madrid EFE in Spanish 1649 GMT 20 Mar 84

[Text] Sao Paulo, 20 Mar (EFE) -- Brigadier Hugo Piva, director of the Aerospace Technology Center [CTA], has said that within 5 years Brazil will be in a position to control nuclear fusion to manufacture the hydrogen bomb, but will use it only to generate electricity. "It must be very clear that we do not want the hydrogen bomb," he stated, "but only controlled fusion to generate electricity."

The CTA, together with the University of Campinas and other institutions, has already developed a high-power laser which will allow them to control the thermonuclear fusion process in 5 years. The so-called "thermonuclear fusion" reaction comes from the fusion of light nuclei to create a heavy nucleus, and this process is used in the explosion of the hydrogen bomb. The fusion of hydrogen atoms is the process by which the sun and the stars generate heat.

Other important research by these institutions involves the fast thorium reactor to generate "clean" energy. Brazil has thorium reserves equivalent to the country's electricity potential, 300,000,000 kw, but the reserves can last 7,500 years, according to Brig Gen Piva.

The CTA director also referred to the agreements on space and military cooperation with the United States, adding that in 1987 Brazil will send into space a scientist to complete a project of the National Institute for Space Research.

CSO: 5100/2083

GOVERNMENT APPROVES BILL ON NUCLEAR SAFETY

PY292308 Santiago EL MERCURIO in Spanish 21 Mar 84 pp C-1, C-2

[Text] The nuclear safety bill includes cash fines for violating the regulatory law on this matter, up to 10,000 monetary units [unidad de fomento] (more than 1,800,000 pesos), as well as life imprisonment for those who violate nuclear safety regulations. The bill also establishes that a contractor can be held liable for a maximum of \$75 million in Chilean currency for each nuclear accident he may have caused.

In a regular meeting held yesterday afternoon, the government junta approved this bill and the bill which amends the health and sanitation code which deals with authorization and control of radioactive installations to be entrusted to the respective health services.

The government junta also approved the bill which transfers to the health services the control and possession of real estate acquired by the National Health Fund. The government junta has thereby authorized the director of the Northern Metropolitan Health Service to transfer to the University of Chile, free of charge, the previously acquired real estate where the Jose Joaquin Aguirre Hospital is located.

Attending the meeting yesterday were Justice Minister Hugo Rosende; Mines Minister Samuel Lira; and Minister Chairman of the Chilean Nuclear Energy Commission, Lieutenant General Herman Brady, retired.

Consulted by EL MERCURIO at the end of the meeting, Brady stated: "This law was absolutely necessary for the rational development of the peaceful use of nuclear energy, because it provides all the necessary regulations for nuclear safety, and protection of persons, of the environment, and of the installations. Thus, future fields of action have been very well established as far as attributions and responsibilities are concerned, in everything that has to do with nuclear development and anything that may derive from it."

Asked whether this new regulation allows foreign investment in the nuclear field, Brady said that the project "clarifies the problem, legislates the matter, and is in line with the most developed countries in the world. Therefore, if there were interest in making investments in the peaceful nuclear development in Chile, this law is a great support for investors."

He also said that the law facilitates greater cooperation with other nations, such as Argentina, because "there is a very clear formula and the other countries are fully aware of the legal situation of nuclear safety in Chile."

The approved bill has 67 articles and six titles: They are. I: On Supervisory Authorities; II: Definitions; III: On Nuclear Safety; IV: On Violations of Nuclear Safety and Protective Regulations; V: On the Responsibility for Nuclear Damage; and VI: On Radioactive Installations.

Article 1 states: "Submitted under this law, as demanded by national interest, will be all activities related to nuclear substances which may be used in these activities, with the purpose of providing health protection, the safety and protection of persons, assets, and the environment, and the just indemnization or compensation for damage that these activities may provoke; with the purpose of preventing illegal appropriation and the illegal use of nuclear energy, substances, and installations; with the purpose of guaranteeing the fulfillment of international agreements to which Chile is a signatory." Article 2 states that "the regulation, supervision, control, and oversight of activities in the previous article will be entrusted to the Chilean Nuclear Energy Commission and to the Mines Ministry in the appropriate case."

CSO: 5100/2082

AEC CHAIRMAN OPENS NUCLEAR SCIENTISTS' PARLEY

Madras THE HINDU in English 23 Mar 84 p 9

[Text] MADRAS, March 22--The need to gear up national nuclear energy programmes to meet the growing needs of the future was stressed by Dr. Raja Ramanna, Chairman, Atomic Energy Commission, while inaugurating an international conference of nuclear scientists at Kalpakkam on Tuesday.

The scientists, representing nine nations in the Asian and Pacific region, comprise the working group of the Regional Cooperative Agreement (RCA) established in 1972 under the auspices of the International Atomic Energy Agency for cooperation in nuclear science and technology.

Referring to the RCA countries, most of which like India were called "developing", Dr. Ramanna said that as they industrialised and improved the living standards of their peoples, expectations would rise and great demands would be made on the basic sectors of the economy like energy.

Nuclear power share: With fossil fuel unlikely to last for more than 50 years, the inevitability of nuclear energy could not be contested, he said. In India, for instance, with the total installed generation capacity expected to rise from the present 30,000 MW to 100,000 MW by the end of the century, 10,000 MW of this is likely to be nuclear power.

However, he said that the answers to the energy question, worked out by the advanced nations, especially with regard to nuclear power, were not always applicable to the developing world. "Our power demands, grid sizes, technology assimilation rates and infrastructural support do not always permit adopting the 'state-of-the-art' technology of the developed world."

"We have to choose deliberately the rate at which nuclear power technology can grow in our countries," he cautioned.

More Kalpakkam-type reactors: For instance he said India had decided to build more reactors of the Kalpakkam type (that deliver 235 MW power) for some more years even though larger plants were being favoured elsewhere in the world. It was because stations of this size were more appropriate to industry and the grid size in India.

Similarly India was going in for fast breeder reactors because it wanted to use thorium, although this was a proposition few other countries in the world were willing to consider, he said. Though the problems with the fast breeder reactors were tough solutions had to be found because thorium reserves here held out the greatest energy hopes for the future. RCA programmes could tackle such questions, he suggested.

Welcoming the scientists, Dr. C. V. Sundaram, Director, Reactor Research Centre, Kalpakkam, said that the Department of Atomic Energy had placed emphasis on the development of fast breeder technology realising its high potential to utilise the domestic resources of thorium and uranium effectively.

He noted that the Fast Breeder Test reactor at Kalpakkam was in an advanced stage of completion and that it was expected to go into operation towards the end of the year.

The working group meeting, with Dr. P. K. Iyengar, Director, Bhabha Atomic Research Centre as its chairman later discussed the progress of the 13 RCA projects during 1983-84, as well as the action plan for the coming year.

CSO: 5100/7069

MINISTER EXPRESSES CONCERN OVER PAKISTAN-CHINA NUCLEAR LINKS

Delhi Domestic Service in English 30 Mar 84

[Text]

The external affairs minister, Mr Narasimha Rao, has expressed India's concern about reports of contacts between Pakistan and China in the nuclear field. He was replying to a calling attention motion on the subject moved by Mr Ramgopal Reddy, Congress-I, and others in the Lok Sabha today. Mr Narasimha Rao, however, assured the house that government has been keeping a constant watch on all developments having a bearing on India's security. He said government would continue to do so with utmost vigil. The minister told the house that statements by senior U.S. officials and experts on Sino-Pakistan nuclear collaboration speak for themselves.

Recently, Mr Paul (Leventhal), president of the Nuclear Control Institute of Washington, has testified before the U.S. congressional subcommittee that China has transferred information regarding sensitive nuclear weapons design to Pakistan. In other testimony, Mr Howard Schaffer, Deputy U.S. assistant secretary of state, confirmed there is a nuclear relationship between China and Pakistan. Mr Narasimha Rao also referred to the recent claim made by a leading nuclear scientist of Pakistan about the ability of his country to produce nuclear weapons. Mr Rao said this was denied by Pakistan after the interview was widely publicised.

Pakistan's spokesman have explained that the country wanted to acquire nuclear technology only for peaceful purposes. They also said that Pakistan had no intention of manufacturing nuclear weapons. But there has been no categorical denial by the Chinese Government of reports about Sino-Pakistan nuclear collaboration.

CSO: 5100/4711

PLANS FOR NIZZANIM NUCLEAR PLANT PUT ON HOLD

Tel Aviv HA'ARETZ in Hebrew 2 Mar 84 p 15

/Article by Eli El'ad: "The Nuclear Plant Wars"/

/Text/ Which site should be selected for the first nuclear power plant in Israel? This question involves a yet-unresolved controversy between the Electric Company on one hand, and the power plant division of the Atomic Energy Commission on the other hand. The resolution will be of great significance. It will determine which of the three sites considered will be the recipient of the material and financial effort involved. The financial effort includes approximately \$5 million just for the inspections necessary for determining the site's qualification for a license. The resolution will probably dictate the site of the first nuclear station producing electricity in Israel, both because of the heavy allocation of resources involved as well as the availability which this will create--but not before the political situation allows Israel to enter the age of nuclear power plants.

The Electric Company is indicating the site of Shivta as preferable for the first nuclear station and it is taking practical measures in the form of six experimental drills. This site is located about 15 kms north of Shivta archaeological site, about 5 kms west of the settlement Ashalim, and about 35 kms southeast of Be'er Sheva (the closest large settlement), in an area utilized mainly for IDF camps and training grounds. This area is about 20 kms from the Egyptian border, and about 60-70 kms from the Mediterranean Sea, and this will require the use of a special cooling system.

Nizzanim site, on the coastline between Ashdod and Ashkelon, which has been considered preferable for a long time, was put on hold. "It is possible that we shall reconsider it in the future for other needs," Dr Louis Teper, the deputy director of the nuclear department in the Electric Company is saying. The personnel of the power plant division in the Atomic Energy Commission take the position that it is necessary to check, beside Shivta, one of two other sites: "Besor site north of Kibbutz Tze'elim, which is nearer to the coastline, and Bet-Guvrin site.

The deputy director of the nuclear power plant project in the Electric Company, engineer Avraham Qidron is saying: "I would be very pleased if there are additional sites in Israel, but I find Shivta site highly preferable, primarily

for population safety considerations. We are talking about a safe distance to population not in case of a regular accident, but in case of a wartime accident. When we "froze" Nizzanim site in 1978, we started to check other areas in the country. Shivta area was empty then. All the IDF was still in Sinai. We checked the entire sand-dunes area of Halutza in order to find the optimal site. Simultaneously, we carried out the geological-seismic inspection. We concluded that the entire area was appropriate for the TGR project. According to population safety considerations, each kilometer farther from settlements is a great advantage. The final selection of the site's exact spot was made by the end of 1983 when, after a correlation with the IDF, the site was removed from the border to a certain extent.

"Since mid-1983, the Electric Company has been concentrating on the plan to license Shivta. The plan consists of three stages. In the first stage, all the existing data were gathered. The second stage, which is about to begin now, includes experimental drills, geophysical lines inspections, etc. The third stage will include the conclusion of the results, the preparation of reports, and the application for a license. We hope to conclude the entire preparation of the paperwork required for the application for a license from the State's board and the licensing division by April 1985."

In Shivta, the nuclear personnel of the Electric Company want to prepare a large nuclear site. They are thinking about two power plants in the first stage, with room for two others. In the meantime they are talking about plants of more than 1,000 MW each. "A nuclear station," Dr Teper is saying, "is more flexible to operate than a coal station, and in the hours of low consumption it is more feasible to reduce nuclear production than coal production--although one must pay an economic penalty. The cost of a 1,200 MW nuclear plant is \$2-2.5 billion today.

Anyway, in contrast to the things heard in the past about how Israel would have to defend its plant by burying it deep in the ground, the Electric Company is talking today about a standard nuclear station whose defense would exist from the very beginning if it is built far enough from populated areas.

Last year, the government appointed Energy Minister Moda'i, in collaboration with Science Minister Yuval Ne'eman, to establish the directorate of the TGR project, which would have to present its program within 2 years. Following that, a directorate committee was established, headed by the ex-president of the Technion, Amos Horev, and the official in charge of the nuclear power plant in the Ministry of Energy, Amnon Enav. The directorate committee includes representatives from the Electric Company, the Atomic Energy Commission, higher education institutions and industry. The directorate committee started operating in August 1983, with the purpose of outlining a policy.

In fact, two ministers are the patrons of the nuclear power plant today: the energy minister, who established the nuclear power plant project directorate committee, and the science minister (a nuclear physicist), who has been in office for 2 years as the acting chief of the plenum of the Atomic Energy Commission. He was appointed to this position by the previous prime minister, Menahem Begin. The Atomic Energy Commission has always been a branch of the

the office of the prime minister, who used to be the head of its plenum, since the commission is a large and prestigious body, which carried the responsibility of determining Israel's nuclear policy.

During the first half of the 1970's, the Atomic Energy Commission was legally authorized to handle the entire licensing process of nuclear power plants in the country. This measure was based on the model of the United States, where the responsibility for developing and building the power plants and the responsibility for examining and licensing them are kept separate. The separation of responsibilities prevents a situation in which "the cat is guarding the cream." This purpose was intended in Israel as well, but it seems that things have become complicated in practice.

A licensing body was indeed established within the Atomic Energy Commission, but simultaneously, a power plant division is operating within the same commission. This division is engaged in planning and developing nuclear stations--the fields in which nuclear power plant personnel in the Electric Company are engaged. The personnel of other units in the Atomic Energy Commission--the Nuclear Research Bureau, and the Nuclear Research Center at Nahal Soreq--are also interested in taking part in the future nuclear project.

There is actually both hidden and unhidden competition between the Electric Company and the Commission over the responsibility for the nuclear project. The competition is also over the allocation of resources, which of course does not help to economize. Energy Minister Moda'i has refrained so far from saying that the project of building the nuclear power plant will be under the responsibility of the Electric Company. He has not said the opposite either. Nevertheless, the existence of the National Coal Company and the Med-Dead Canal Company (the need for both is controversial) indicates that a special company for the nuclear power station will probably be established.

Nuclear power plant managers in the Electrical Company are saying: "We have always claimed that our concession for the production of electricity grants us the responsibility and the authority to build the nuclear station. The Government's first decision on the station in May 1973 granted us the responsibility for building it, with a certain backing by the Commission. The responsibility for the licensing was granted to the Commission. There was no doubt then that the Electric Company would build the plant."

In fact, alot has changed since it looked as if they were going to build the first station. (The memorandum concerning the supply of the plant by the Westinghouse Company was signed on 5 February 1977, and is still subject to political approval by the U.S. Government.) The number of the Electric Company employees employed in the nuclear power plant project was reduced by half, to 13 men. Many of them left in disappointment. Some of them are abroad now. "It turned out to be a preparatory phase. People feel that they are working to fill up drawers. In my opinion, it is good to work toward full drawers, because it is very important to have something to take out of them when the time comes," Mr Qidron says.

A last word on the subject of a Israeli plant: There are in Israel, no doubt, the forces necessary for constructing the "problematic" parts of the plant, but it is also clear that their construction will be very expensive. Other countries, like Germany and Sweden, have already given up independent nuclear development. It seems that after all, it will be necessary to find the political procedure necessary for contacting an experienced supplier, whose government will approve the supply of the plant to Israel. There is no shortage of suppliers in the United States, Canada, and West Europe.

12320

CSO: 5100/4502

COST OF NUCLEAR-GENERATED ENERGY HIGHER THAN COAL

Cape Town THE CAPE TIMES in English 27 Feb 84 p 6

[Editorial: "A Nuclear Bombshell"]

[Text]

WERE the Koeberg nuclear power station to cut energy costs and generate electricity more cheaply than coal-fired power stations, the saving might have provided some consolation for its presence a mere 30 km from Cape Town. The radiation risk, however remote the fallible experts rate that risk, could at least have been borne stoically by a dense urban population of 1.5 million people for economic reasons. But now it turns out that the Mother City submitted to the siting of the nuclear reactors on its doorstep and became an atomic guinea pig for the rest of the country, watching from a safe distance, so that it could pay more, not less, for electricity.

The Minister of Mineral and Energy Affairs, Mr Pietie du Plessis, has revealed that the cost of nuclear-generated electricity will be considerably more than that produced with coal. The disparity in costs differs according to the circumstances, the biggest being a 300 percent difference. But even if the transport and other costs are

taken into account, the average generating costs for Eskom's coal-fired power stations in the Western Cape amounted to about 4,7c per kilowatt hour in 1983. In contrast, Koeberg's estimated costs when it goes on stream will be 5,6c per kilowatt. This hardly accords with the prediction five years ago by the Western Cape manager of Eskom, Mr R P A Myburgh, that the estimated generating costs would be comparable to those of a similar-sized coal-fired station. Instead, we will end up paying more for the dubious privilege of living cheek by jowl with a monster most of us never wanted in the first place.

Security is often cited as an advantage of Koeberg, with no long supply lines of coal that can easily be disrupted. But events over the past few years have shown that Koeberg is also vulnerable. The consequences of a serious accident there are infinitely graver for Cape Town than the delay of a couple of coal trains from the north.

CSO: 5100/27

NUCLEAR WASTE TO BE DUMPED IN NAMAQUALAND

Johannesburg THE STAR in English 5 Mar 84 p 8

[Article by Sheryl Raine]

[Text]

Excavations to turn a barren stretch of Namaqualand into South Africa's first radioactive waste depository will start within the next six months, says the Nuclear Development Corporation (Nucor).

Three farms, approximately 10 000 ha in extent, have been bought at Vaalputs, Namaqualand, for use as the first national radioactive dustbin.

The site will be administered by Nucor and the first consignments of waste are expected at Vaalputs in about three years.

Research at Vaalputs indicates that the site is socio-economically and geologically suitable to become a nuclear depository, says Nucor.

The surface materials of the district consist of sand, calcrete and a variety of clays, including kaolin. All of these were extremely suitable for the retention and immobilisation of radioactive waste, a Nucor spokesman explained.

Waste stored at Vaalputs will come mostly from Koeberg nuclear power station, near Cape Town, and will include resins, laboratory equipment, and clothing worn by workers and researchers in the nuclear industry.

"Nuclear waste will be taken to the site in accordance with the strictest internationally approved safety regulations," the Nucor spokesman said.

These regulations were drawn up by the International Atomic Energy Agency in Vienna. They include standards of safety which provide an acceptable level of control of the radiation hazards to people, property and the environment.

"Medium-active waste will be set in a concrete mixture in concrete drums and low-active waste will be compacted in steel drums," the spokesman said.

"The steel drums will resist corrosion for between five and 10 years. But ground covering will ensure that any harmful radionuclides are safely contained. The concrete drums will show little, if any, corrosion over an indefinite period.

"About 2 000 drums will be received at Vaalputs each year over a period of 40 years. The area used will be no bigger than a rugby field and each item will be measured and recorded before being deposited.

ADMINISTRATION/TECHNICAL BLOCK

Site manager, his deputy, health physics officer, laboratory, instrument room, change rooms, canteen.

VEHICLE AND EQUIPMENT SERVICING AREA

DECONTAMINATION AND RE-ENCAPSULATION AREAS

If incoming vehicles or drums are contaminated, they will be treated. Because of checks carried out before waste is sent, these facilities are expected to be used infrequently.

DISPOSAL AREA

Site vehicle will be off-loaded and waste deposited in trenches.

TRANSFER AREA

Site vehicle loaded with drums of radioactive waste will go to trench area for off loading.

TRENCH CAPPING AREA

Trenches will be back-filled using previously excavated clay which has good ion-exchange properties. They will be finished off with caps.

RECEPTION AREA

Incoming vehicles/documents will be checked, vehicles will be tested for freedom from contamination and off loaded, drums of radioactive waste will be transferred to site vehicle.

EXCAVATION AREA

Earthmoving equipment will extend trenches as required.

National Radioactive Waste Repository
Vaalputs, Namaqualand.
Artists' impression

"For the most part, low and intermediate waste will decay to safe limits within 150 years. In the unlikely event of the rupture of a container, no escaping radionuclides will easily find their way to the surface within a period of 1 000 years by which time they will have become harmless."

Cape is to Get New Research N-Centre

Within the next five years the Nuclear Development Corporation of South Africa (Nucor) will establish a nuclear research centre in the Riversdale district in the Cape.

The site will be called Gouriqua, after an extinct tribe who once inhabited the area.

"Pelindaba, outside Pretoria, is virtually saturated spacewise, so a new research centre will be established at Gouriqua," a Nucor spokesman said.

The research at Gouriqua will follow the lines of that at Pelindaba. All that is known at present is that the centre will not be involved with generating nuclear power.

The buildings will be designed to blend with their surroundings, and everything possible will be done to preserve and enhance the natural environment.

Being close to the Gouritz River mouth, one of the advantages of the Gouriqua site will be an abundance of sea water for cooling purposes.

CSO: 5100/27

COOPERATION OF SOUTH AFRICA WITH UNITED STATES IN NUCLEAR SPHERE

Moscow IZVESTIYA in Russian 21 Jan 84 p 5

[Article by K. Georgiyev: "The Mushroom Cloud Shadow Over Africa"]

[Excerpts] From secret documents obtained by the Scripps-Howard newspaper chain, it became known that between 1979 and 1982, 80 kg of enriched uranium "disappeared" from the Oak Ridge plant. The "disappearance" of nuclear weapons' raw material from Pentagon subcontractor plants is not sensational news, considering the "loss" of 110 kg of this raw material from the nuclear fuel plant in Erwin, Tennessee, and of 198 kg from the Apollo, Pennsylvania, plant. But the shortage of Oak Ridge broke all previous records: 770 kg of enriched uranium were lost!

It is obvious that the uranium was not stolen through a hole in the fence. Most likely, the owners themselves opened the gates. For whom? The American press answers this question, recalling that when uranium disappears in the United States under "unknown" circumstances, one should look for it in South Africa or Israel, who secretly acquire the raw material for nuclear weapons. According to the WASHINGTON POST, in April of last year alone, two American corporations shipped 100 kg of enriched uranium to South Africa through third countries.

The secret nuclear links between firms in the United States, West Germany, France, Israel and South Africa have long been an open secret, the more so since the present American administration has openly declared South Africa a "friendly country."

The United States and South Africa concluded an agreement in 1957, extending to 2007, on the use of atomic energy for peaceful purposes. In fact, it served as a screen for shipments of enough enriched uranium to Pretoria to produce tens of atom bombs. In 1965 the first "Safari-1" nuclear reactor was installed in the South African atomic center, Pelindaba. It was designed completely by American specialists. The United States was required to ship out the nuclear reactor wastes, including plutonium-239, which can be used to make nuclear weapons. But who knows if the Americans have fulfilled their obligation?

In an attempt to begin enriching its own uranium, South Africa, with the aid of West Germany, built its own plant in Valindaba, the first phase of which went into operation in 1975. France helped South Africa build two 950-mega-watt nuclear power plants, and two reactors built by the French firm, Framatom, can be used to produce plutonium-239.

But the Palindaba research center does not satisfy Pretoria's ambitions. Therefore, South Africa decided to create a second nuclear research center in Cape Province, near the city of Mossel Bay. As the Senegalese newspaper TAXAW has written, American and Israeli advisers are assisting in its construction. In turn, South African specialists are being trained at American installations. Some of them have gone to the uranium enrichment plant at Portsmouth, Ohio.

As to whether South Africa is near its cherished goal, procuring nuclear weapons, the Nigerian newspaper NEW NIGERIAN wrote that flashes of light were reported in the South Atlantic in September 1979 and December 1980. At present, the newspaper says, preparations are being made for the next tests, this time underground.

The English newspaper DAILY TELEGRAPH writes that in preparation for these tests, South African military intelligence officers Lieutenant General Van Der Westhuizen and Vice Admiral Du Plessis visited the United States in 1982. The mission of the emissaries from Pretoria was to hide from the world community the preparations underway in the atomic proving ground in the Apington region (Kalahari Desert), where holes were being drilled for underground atomic testing and to where the necessary equipment had been shipped.

The NEW NIGERIAN refers to a letter from former South African secret service (BOSS) chief Van Den Berg to D. Sole, South African ambassador to West Germany. The letter emphasizes the need to "avoid leaks of information about the project" and requests recommendations from the United States on camouflaging test preparations.

Today Pretoria, which has not yet signed the Nuclear Non-Proliferation Treaty, is more often threatening to use nuclear weapons against its African neighbors who support national liberation movements in southern Africa. At one time, South African Deputy Defense Minister Coetzee, in an interview in the American weekly NEWSWEEK, announced that Pretoria would not refuse to use the atom bombs as the "last line of defense" of South Africa.

12595

CSO: 5100/3

RISO FACILITY HOPES FOR KNOW-HOW EXPORT TO FRG'S INTERATOM

Copenhagen BERLINGSKE TIDENDE in Danish 5 Mar 84 p 2

[Article by Lisbeth Knudsen: "Big Export Order for Risø"]

[Text] The Risø Research Facility has hopes of more orders for some time to come, in cooperation with the West German INTERATOM firm.

The Risø Research Facility is on the way to obtaining a new important export contract in the millions, in cooperation with the West German INTERATOM firm, owned by Siemens. Risø's share of the project totaling around 40 million kroner is estimated to be an order of 12 million kroner and 1 million kroner of the proceeds will go to the State treasury.

According to estimates at the Risø Research Facility, cooperation with INTERATOM regarding this specific project will provide an opportunity for joint submission of bids for other interested buyers. It will also provide Risø an opportunity to utilize its know-how in the nuclear field in a new context.

The Risø order includes the supplying of a so-called cold neutron source to the West German GKSS company. This is a research institution which is primarily occupied with reactor safety and technology as well as environmental research. Fifty-one percent of shares in the company are owned by the German Federal Republic and the states of Hamburg, Bremen, Niedersachsen and Schleswig-Holstein. A cold neutron source is used for braking neutrons exiting from a test tube in a reactor.

Risø has previously in cooperation with INTERATOM supplied a similar cold neutron source to another West German company.

When approval is available from the Folketing's finance committee of the fact that the State will furnish the necessary guarantee of observance of the contract, the contract will be signed in the course of a short time.

8985

CSO: 5100/2549

GOVERNMENT, INDUSTRY INCREASINGLY OPPOSE NUCLEAR POWER

Copenhagen BERLINGSKE AFTEN in Danish 3-9 Feb 84 pp 6-7

[Analysis article: "The Industry Council Now Also Says No to Nuclear Power; 10 Years Which Did Away with Nuclear Power"]

[Excerpts]

It came hardly as any surprise when Prime Minister Poul Schlüter during the election campaign said that the time for the introduction of nuclear power in Denmark has passed and that it can hardly pay. In recent years nuclear power has had a ticking price bomb under it and in electric power plant circles it is being questioned whether it can pay to use nuclear-fueled power plants instead of coal-fired power plants. The Industry Council has already written off nuclear power and highly placed sources say, "Cold economic calculations show that it would be unprofitable to introduce nuclear power." The experience has been similar in the USA. New reports show that nuclear power projects have meant big losses for American electric power companies. Innumerable projects have been stopped and many companies find themselves in a deep economic crisis. The data have been collected by Flemming Behrendt, Øjvind Kyrø, Anders Jerichow, Tor Nørretranders and Rolf Geckler, who also wrote the report on nuclear power's economic challenges.

Denmark will presumably not get nuclear power in this century. Overtaken by economic developments, nuclear power has had a hard time making itself prevail over other energy sources. The economic meltdown is threatening American nuclear power plants and the French nuclear power project, which has been characterized by experts as one of the most promising, no longer seems so profitable as it did previously.

Steeply rising costs of building and operating a nuclear power plant and falling prices for coal and oil have made nuclear power plants unsaleable.

Energy-glutton countries like Denmark are no longer standing with their backs against the wall. On the contrary, DONG [Danish Oil and Natural Gas Company] has difficulty in disposing of natural gas. And researchers, electric power plants and officials pay so little attention to nuclear power today that it is unlikely to imagine electricity produced at a Danish nuclear power plant.

Prime Minister Poul Schlüter also believes that the time for the introduction of nuclear power in Denmark is about to have passed.

"There is much to indicate that it can no longer pay to build nuclear power plants," the prime minister said during the election campaign in an interview in JYLLANDS-POSTEN.

A few years ago such a statement from the country's prime minister would have created a political stir. But only a few disputed Poul Schlüter's words. Perhaps because he only said what many decision makers and professionals believe.

Former Energy Minister and Social Democratic Folketing Member Poul Nielson says:

"In terms of practical economics, the question of whether we are to have nuclear power or not is heavily overestimated."

There seems to be cover for his statements also far into the prime minister's political backwater and among researchers.

The chairman of the Industry Council, Director Niels Wilhjelm, earlier expressed skepticism over the claimed advantages of introducing nuclear power, and a highly placed source in the council says unofficially to WEEKENDAVISEN:

"Cold economic calculations show that it would be unprofitable to introduce nuclear power."

Doctor of Engineering Professor Vagn Korsgaard of Danmarks Tekniske Højskole [Danish Technical College] says:

"It is a mistake that we did not get things off the ground 10 to 15 years ago. But little by little it has certainly gotten about to be too late."

Likewise one of nuclear power's most fervent supporters over the last 10 years, Torkild Morsing, editor-in-chief of INGENIØREN, recently wrote off nuclear power. He regrets to the periodical ATOMKRAFT? [NUCLEAR POWER?] that nuclear power has been "defeated" and that we have been "cut off" from using this energy source.

Even the electric power companies, which have big interests at stake, have more or less expressed understanding of the prime minister's statements. The chairman of the Jutland-Funen electric power collaborative, ELSAM, P. Grønberg Christensen, says that "the electric power plants, just as the prime minister,

are not interested in splitting the people on the question of nuclear power." However, Grønberg Christensen refuses to make a statement regarding economic conclusions at the present time. He wants to wait until the energy minister and the environment minister have presented their reports on the economics, reactor safety and the disposal of radioactive waste.

"But," he says, "it is no secret that it has become considerably more expensive to build nuclear power plants than it was 10 years ago."

Information Chief Finn Hasted of ELKRAFT adds:

"There are nuclear power plants which are so expensive that prices have become the same as for electricity produced by coal-fired power plants."

Nuclear Bankruptcy

The expectations were great when the first American nuclear power plant for production of electricity, Oyster Creek, was put into service in 1952.

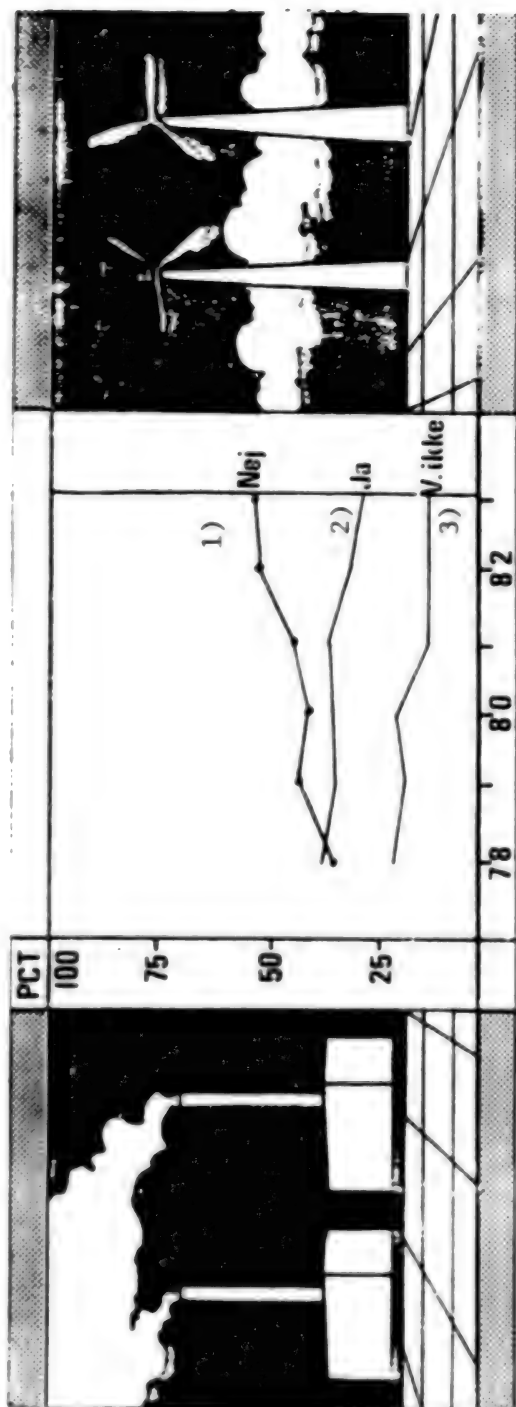
Today, 32 years later, the American nuclear power industry finds itself in a deep recession. Poor planning, poor workmanship, high financing costs and increasingly stricter requirements for safety have made the cost of American nuclear plants increase up to 20 percent per year since the middle of the 70's. Existing plants have again been made into construction sites and amounts in the tens of millions have been invested in meeting the authorities' safety requirements. Expansion with new nuclear power plants has come to a standstill and the industry is tormented with frustration over the state of affairs.

The French Way

In contrast to the American nuclear power industry, the French has an international reputation for efficiency and speed. While it takes about 10 years to build a nuclear power plant in the USA, the French can manage the task in less than 6 years. The efficiency is due to a great extent to a standardized and stringent program. Electricité de France, which has a monopoly on all production of electric power, has purchased all its reactors from the government-supported FRAMATOME firm, which means that the French nuclear power industry is not subject to ordinary market conditions.

This has had the effect that construction costs per kilowatt have increased by only 5 percent a year from 1974-1982. French planners estimate that nuclear power plants cost about 17 percent more than coal-fired power plants and that nuclear power is 20 to 40 percent less expensive than power from coal-fired power plants.

But even though the French nuclear power project is one of the most successful in international terms, the French energy minister said just before the turn of the year that new nuclear power plants will not be constructed unless the cost drops.



In 1978 there were just as many who said yes as no to nuclear power, while in 1983 there were almost twice as many (57 percent) who said no to nuclear power. Source: Gallup.

Key:

- 1. No
- 2. Yes
- 3. Do not know

Yearly Increase in Construction Costs of a Nuclear Power Plant. Source: Worldwatch Institute

<u>Country</u>	<u>Nuclear power 1983, 1000 MW</u>	<u>Cost increase (annual), percent</u>
USA	60	13
France	22	5
Japan	17	11
West Germany	10	9
Sweden	7	8
Canada	7	6

The experience of the Swedes is reminiscent of that of the French. According to figures from Risø, Sweden saves 5 to 6 billion kroner a year by using nuclear power. However, this figure is influenced by the fact that the Swedes obtain the necessary backup for nuclear power by using inexpensive hydroelectric power. But in Sweden, too, construction costs have increased considerably and more than first supposed.

Simple Assumptions

OECD has also occupied itself with the cost of nuclear power, and in a just published report from the organization's nuclear power administration it reads in conclusion:

"In Europe and Japan nuclear power for the production of electricity will, in economic terms, be between 30 and 70 percent less expensive than coal-fired power plants which are put into operation in 1990."

The report, based on a "quite simple set of standard assumptions," says further that the total costs for nuclear-produced electricity in certain countries will be less than or on a level with fuel costs for coal. And even with a 50-percent increase in investment, a 2- to 3-time as high cost for uranium fuel and utilization of capacity of under 50 percent, nuclear power in Europe and Japan will be less expensive than coal-fired power plants with utilization of capacity of 70 percent.

But, OECD notes: There exists no unequivocally correct cost for nuclear- or coal-produced electricity. The only correct way to compare the economics of nuclear power and coal power is therefore to set the costs against one another--with conditions in the country which is to make the investment as a basis.

This is presumably the explanation for the fact that the OECD report stands in contrast to the earlier discussed American reports, which are based on empirical data. Likewise, the report does not take into account the situation that Denmark with coal-fired power plants produces the least expensive electricity in the Common Market.

Section Chief Niels O. Gram of the Industry Council says that the report's conclusions are based on assumptions which are not used in Denmark.

"I will be very cautious about using the OECD figures just like that," the section head says. "We have assembled a collection of international reports and are at the moment looking at their assessments, which are based on extremely different assumptions, which makes it impossible to apply them directly to Danish conditions."

Today's Denmark

The Danish debate on nuclear power began when the nation was shaken during the first oil crisis in the winter of 1973-74. ELSAM's Director E.L. Jacobsen made an appearance on a television news program and said that the electric power plants were ready to order a "key-ready" nuclear power plant in 14 days. The plant was to be ready in 1980 and later four more nuclear power plants were to be built.

The reality became something different, and today the electric power plants, researchers, officials and politicians pay only slight attention to nuclear power as an energy source. From having had first priority in ELSAM's planning, nuclear power today is at the bottom of a 10-item-long priority list.

Just as the reality has become different than the electric power plants imagined at the beginning of the 70's, developments have falsified the electric power plants' and Energy Ministry's optimistic forecasts regarding the development of electric power consumption.

In 1973 the electric power plants estimated the yearly increase in electric power consumption at 8.5 percent, and in the Commerce Ministry's energy policy review of 1974 a doubling of consumption up to 1990 was counted on. The figures resulted from the fact that the development up to then had been projected. But the world did not allow itself to continue the scenario: From 1972 to 1980 electric power consumption increased by only 4.9 percent per year and in 1983 consumption increased by only 2.1 percent as compared with the year before.

The small growth in energy consumption was expressed in "Energiplan 81" [Energy Plan 81], EP 81, by the fact that the Energy Ministry estimates for the year 2000 a power plant demand which is about four times less than the electric power plants' forecasts from 1973 showed. EP 81 expects that consumption up to the year 2000 will increase by only 2.1 percent per year and that it first after 1990 will be necessary to put further capacities into service in order to cover the demand for electricity.

And these figures will perhaps not even come true. Lecturer Jørgen Nørgaard of Danmarks Tekniske Højskole has just published a study which shows that with energy saving measures it will be possible to reduce electric power consumption to one third of the present over a period of 25 to 30 years.

"If we really go to work it will be quite simple from a technical standpoint," Jørgen Nørgaard says, who in his study assumed production and comfort at a level corresponding to the 1984 level.

Less Expensive Coal

While electric power consumption has increased less than expected, the price of coal has dropped more than expected.

Since there is a surplus of coal on the world market, the price for coal--directly contrary to all scenarios in energy planning--has dropped more than the price of oil, and the price of coal is so low today that even in electric power plant circles it has begun to be questioned whether it can pay to introduce nuclear power.

The immense cost increases for nuclear power plants and the vertical dive in coal prices have also had the effect that some of the sums in EP 81 have become obsolete. In EP 81 there is mention of "significant" economic gains by the introduction of nuclear power and it is estimated that nuclear power will cost only two thirds of the cost of coal power.

Former Energy Minister Poul Nielson, who was responsible for EP 81's creation, admits today that "the strain has supposedly become less." Incidentally, he characterizes nuclear power as "an economically overestimated question."

Niels O. Gram of the Industry Council adds:

"The question is whether the low price of coal can last. There are a whole number of things which can point to the fact. So I will estimate that the difference between coal and nuclear power is now right at the balance point."

Back in 1973, when ELSAM and ELKRAFT made their forecasts for the future, they presumably also did not imagine that 10 years later they would operate with overcapacity of, respectively, about 50 and about 36 percent. As old plants gradually are withdrawn from service, this capacity will of course be less. But when both ELSAM and ELKRAFT have large coal-fired power plants under construction there will in the future, too, be ample room to put extra strain on the system.

When the lines are operating at full potential the output is about 5000 MW, while at night it drops to about 1100 MW in the ELSAM area and about 900 MW in the ELKRAFT area. This is so low an output that it can just barely keep a typical commercial nuclear power plant optimal if it is to run at full load, which requires swapping between the two electric power conglomerates.

"Up to 1995 there is no practicality in other than a nuclear power plant to be shared between ELSAM and ELKRAFT," Information Chief Finn Hasted of ELKRAFT says.

To this Poul Nielson says:

"It will be immensely costly to have to keep up and update our know-how regarding nuclear power. What we currently would have to invest is not proportional to the return."

Certainty of the supply was one of the arguments when the electric power plants introduced nuclear power in the energy policy debate. But at that time the electric power plants could not know that the first Danish natural gas from the North Sea will be brought ashore by the fall. In such abundant amounts at that time DONG has difficulty in getting it sold. This has made the gas a politically explosive subject. Energy Minister Knud Enggaard is pressing for getting the gas sold, and using the gas in decentralized heat-and-power plants is being considered as a possibility. Something the electric power plants and officials up to now have considered taboo.

In government circles it is said that this can become a decisive argument against the introduction of nuclear power.

"The gas is one of the factors which can cause one to say that nuclear power is perhaps less economical because under any circumstances the gas should be used," Conservative energy policy spokesperson Annelise Gotfredsen says, who previously had been the biggest critic of the gas project and the biggest supporter of nuclear power at Christiansborg.

Energy Minister Knud Enggaard refuses to speak regarding the economic aspects of introducing nuclear power. He refers to the fact that the Environment Ministry is in the process of evaluating the electric power plants' reports regarding reactor safety and the disposal of radioactive waste, and that the Energy Ministry is about to update the economic estimates. According to the plan, these data, which are expected to appear during the spring, are to form the background for the government's decision regarding saying yes or no to nuclear power.

According to WEEKENDAVISEN's information, nothing much new will appear in the Environment Administration's reports. It will just be a question of evaluation of data known in advance.

On the contrary, it will presumably be necessary in the Energy Ministry to adjust the figures downward once again, and WEEKENDAVISEN has learned that the ministry will receive data from ELKRAFT which shows that nuclear power is no longer an unequivocally economically profitable alternative to coal power.

And the debate for and against nuclear power will to a great extent come to concern economics.

Niels O. Gram says:

"It is important that we now leave the black-and-white ideological debate. Now it has primarily become a question of profitability."

But aside from this, nothing much has taken place in the nuclear field in Denmark over the last 10 years. Risø, which was established with a view toward the introduction of nuclear power in Denmark, has little by little been using only 15 percent of its resources for nuclear research. The electric power plants have only a few purely nuclear engineers employed, and the subject has ground to a halt in the central administration.

As a well informed source says:

"Both the authorities and electric power plants will be caught with their pants down if it is decided in a few months that Denmark is to have nuclear power."

8985

CSO: 5100/2549

IMPLICATIONS OF REJECTING NUCLEAR POWER DEBATED IN FOLKETING

Copenhagen AKTUELT in Danish 11 Feb 84 p 15

[Article by Bj.: "Nuclear Power in the Folketing"]

[Text] The Folketing is now to have a debate regarding nuclear power. The Social Democratic Party and the Socialist People's Party have jointly announced an inquiry regarding the government's attitude toward nuclear power. The background is Prime Minister Poul Schlüter's (Conservative Party) reports during the election campaign that nuclear power is behind the times. The two parties want to know what the prime minister bases his new information regarding the economics of nuclear power on and what consequences the government will draw from nuclear power's being abandoned. The Social Democratic Party and Socialist People's Party believe that the decision must mean the development of natural gas and of renewable energy and can presumably receive the backing of a majority in the Folketing consisting of the Social Democratic Party, the Socialist People's Party, the Radical Liberal Party and the Socialist Left Party.

Folketing Member Mette Groes (Social Democratic Party) has at the same time asked the prime minister to see to it that the State subsidies for renewable energy projects continue at least at the same level as previously. This year the government reduced the subsidies from 124 million kroner to 60 million kroner and to zero kroner in 1985 and 1986.

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NEW REPORT: MINING OF URANIUM IN GREENLAND ECONOMICALLY FEASIBLE

Godthaab GRONLANDSPOSTEN in Danish 5 Mar 84 p 2

[Article by Jûlut: "Big Profits and New Jobs"]

[Text] The opportunities of big profits and new jobs are latent in the uranium from Kvanne Mountain, it says in the latest report from Risø.

In 10 years it will be possible to start a mining operation which will provide 1000 new jobs and annual profits of 40 million kroner. The deposit is readily accessible. But the whole thing is not as easy as it sounds. For it is a question of uranium, and for most young people in Greenland uranium is an abomination which means death and the destruction of nature. The mining of uranium is a question of political resolve, which can hardly be realized today. But the land's economy can become so strapped that it will become necessary to take a peek at uranium's possibilities.

The uranium discussion has been gradually pending for 25 years and will without a doubt flare up now after publication of Risø's latest report, which says that the mining of uranium in Greenland can pay.

Many New Facilities

There has been a lot of scribbling about uranium. We have heard that the billion-year-old rocks near Narsaq contain many minerals in demand, including 20,500 tons of uranium, which is enough to guarantee Greenland's and Denmark's combined energy needs for 100 years to come. Now we also know that mining can provide employment for 600 Greenlanders and 400 called-in outsiders for 15 years, and each year 130 million kroner in wages will be paid out.

The uranium is readily accessible and can, according to the report, be mined in open mines. Nevertheless, enormous sums are required in order to recover the deposit. Investment for opening the mine is estimated at an amount between 4.7 and 5.2 billion kroner. But then, too, something will be gotten for the money, including a new harbor, two power plants--a hydroelectric power station and a coal-fired plant--housing for a population increase in Narsaq of 1400 people, and a school for 150 pupils.

The whole thing will be worth the trouble. That is, it has been estimated that profits from the mining operation will amount to 40 million kroner a year. This is money which will warm well in these cold times in which hard winters put a stop to fishing.

Environmental Studies

Two draft projects are being worked on. In one the entire facility will be assembled around the town of Narsaq. And Lake Taseq in the vicinity of the mine has been chosen as the depot for the rest of the soda lye which is to be used for mining. A dam and a purification plant will be built in order to control the draining of Taseq into the Narsaq River. It is the intention that the lake is to be drained and covered up with sand when the mine in its time has been exhausted.

Project No 2 proposes that the facility is to be located 20 km farther into the fjord near Nuussuaq. Tasiusarsuaq, a bay about 5 km away, will be used as a depot for the soda lye. The report says that it will perhaps be necessary to empty the sea water out of the bay and plant the bay after use.

But the dust from the crushing will hardly produce inconveniences. On the other hand, blasting and truck traffic will produce dust problems.

The report says in conclusion that the question of whether the mining can take place--without its having an adverse affect on animal and plant life--has still not been answered sufficiently clearly. And several environmental studies are required for this.

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CSO: 5100/2549

SEARCH CONTINUES FOR NUCLEAR FUEL WASTE BURIAL SITE

Helsinki UUSI SUOMI in Finnish 20 Feb 84 p 3

[Article: "Whole Country Studied: Selection of Locations for Nuclear Wastes in Progress"]

[Text] Preliminary studies on finding a final location for fuel used in nuclear power plants are continuing.

"The study area is now all of Finland. These preliminary investigations will last until the end of 1985. Then perhaps 5-10 of the places seen as best will be chosen, and we will start to study them more thoroughly," says Paavo Vuorela, licentiate in philosophy, of the Geological Research Center.

So according to Vuorela the studies have not yet concentrated on any particular locations. All of Finland is being studied now with satellite pictures and geodetic maps.

The most important studies, along with drilling at selected sites, are timed for the years 1986-92.

According to Vuorela, things such as the fracturing of the bedrock and ore deposits are being studied now. "It is essential to know, for example, the behavior of ground water in the bedrock. In addition, we are looking for the most homogenous and uniform sections of bedrock.

"Later, transportation factors will perhaps influence the choices," Vuorela thought. "We are not getting into those at this stage of the investigation, nor into municipal boundaries or ownership relations."

According to Vuorela there are some clearly uncommendable places. One such is the strip between Lake Ladoga and the northern Gulf of Bothnia, which is known for its ore deposits, among other things.

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CSO: 5100/2547

NEW EMERGENCY PLANNING FOR NUCLEAR PLANT ACCIDENTS READIED

Helsinki HELSINGIN SANOMAT in Finnish 29 Feb 84 p 11

[Article: "New Guideline Coming for Nuclear Accident Rescue Service"]

[Text] The Interior Ministry is revising the general guideline concerning rescue-service activity in nuclear power accidents. The proposed new general guideline is to be ready by the end of October.

According to Interior Ministry Matti Luttinen (Social Democrat), the 1976 guideline is partly obsolete, due to developments in laws and in rescue service. The deficiencies have not, however, endangered rescue service in accident situations.

Luttinen responded to a written parliamentary inquiry, in which 31 representatives from all parliamentary parties asked about organizing rescue service in the Loviisa area in order to be ready for a nuclear power plant accident.

The VTT [National Scientific Research Center], at the request of the ministry, studied the significance of evacuation and local shelters in accident situations. According to the study, even the protection provided by average-size individual and apartment houses against gamma rays strongly reduces the danger of receiving large doses of radiation.

According to Luttinen, plans prepared for a nuclear accident are not based on the use of population shelters but on so-called "protective evasion." The writers of the inquiry noted that in Loviisa there are no rock shelters, that most houses lack population shelters, and that there are no public population shelters. Minister Luttinen says in his response that we must be careful to build population shelters against exceptional conditions in Loviisa as well.

9611

CSO: 5100/2547

UK NUCLEAR EXPERTS STUDY LOVIISA PLANT RADIATION REGULATIONS

Helsinki HELSINGIN SANOMAT in Finnish 3 Mar 84 p 8

[Article: "England's Nuclear Power Plant Builders on Idea Trip: Loviisa's Low Radiation Levels Interest Plant Visitors"]

[Text] Loviisa -- The extremely small doses of radiation received by Finnish nuclear power plant personnel are arousing international interest. On Friday, two Englishmen visited the Loviisa nuclear power plant to obtain ideas for their own thousand-megawatt nuclear power projects.

A 1160-megawatt nuclear power plant operating on the pressure-vessel principle is presently being planned for Eastern England. It is supposed to start construction in two years. Project chief Brian V. George says he has already become acquainted with French, German and Swedish installations, among others.

The Finnish installations are interesting mainly because the doses of radiation received by the personnel in them have so far been kept below one fifth of the general radiation amounts for pressure-vessel plants worldwide.

The interest of the English was also increased by the fact that the Finnish plants can operate at maximum efficiency year-round, except for the shut down for annual maintenance.

One of the English visitors, fuel expert James Steward, visited Loviisa once before in 1968, during the early constitution phases of Loviisa I. Steward is a member of the English national nuclear power council.

Jussi Helske, chief of the Loviisa plant, explained to George and Steward the factors that affect radiation doses. The total dosage is affected by, among other things, ample use of concrete in the structure, good materials selection in the radioactive area, and good water chemistry on the radioactive side.

The information received in Loviisa will clearly not influence the English decisions greatly, because the project is already so far advanced that the most important components have been ordered. The pressure vessel for the plant will come from the Framatome factory in France, which in recent times has had difficulty in finding customers.

According to Brian George, the French option came out significantly cheaper than obtaining a pressure vessel from the United States, for example.

From Gas Coolers to Pressure-Vessel Reactors

The learning trip of engineers from England, which is one of the pioneer nuclear-power countries, to a relatively young nuclear-power country like Finland, is connected with new English perspectives.

The English have been using gas-cooled systems up to now, the oldest of which have already been in use over twenty years. But the gas-cooled systems are rather small. The English have decided on systems working on the pressure-vessel principle, striving for more economical large units.

Brian George now directs the first pressure-vessel project, called Sizewell B.

The cost of the system is now calculated at 2 billion U.S. dollars, or more than 10 billion markkas.

Democracy Part of the Nuclear Power Project

A broad debate is now going on in regard to the English nuclear power project. It is connected in principle with the same kind of hearing procedure that has been outlined for the Finnish nuclear-energy law now in preparation.

In England the procedure is based on a 1950 law, according to which the local population is to be heard on all major matters.

In connection with the nuclear-power project the hearing procedure has turned out to be exceptionally interesting. The central figure in the hearings is the "inspector," who is a lawyer.

Hearings on the nuclear-power laws began a year ago last January. According to Brian George, the inspector is to make a summary report by July of next year.

But now the matter has broadened, because many kinds of questions have come forward in the hearings. The main lines are connected with safety, economy, need for electricity, environmental effects, and nuclear waste disposal.

"The fact that the inspector, as a lawyer, speaks with different concepts than I do is a problem." Discussions between George and the inspector are in fact now being conducted through power-company lawyers as intermediaries.

Spent Fuel Kept 50 Years

Nuclear-waste matters in England have been decided in such a way that the most radioactive waste, spent fuel, will be kept and cooled about 50 years before being finally placed somewhere, says James Steward, member of the English national nuclear power council.

Steward's comment means that in England there is a very pessimistic attitude on the possibilities of recycling. They have experienced at Wincase, for example.

Brian George also observes that the problem of waste is similar all over the world. Nowadays people are generally deciding on a long storage time before final placement, so that safety questions can be solved sufficiently well.

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CSO: 5100/2553

SOVIET EXPERT DISCUSSES NUCLEAR PLANT PURCHASE WITH LEADERS

Helsinki HELSINGIN SANOMAT in Finnish 8 Mar 84 p 22

[Article: "Soviet Minister Lectures in Parliament on Nuclear Power: Four Largest Parties Take Turns Listening"]

[Text] The Soviets have joined the nuclear-power debate now going on in our Parliament. G. A. Shasharin, first deputy secretary for energy in the Soviet Union, lectured about Soviet nuclear power before the Parliamentary delegations of the four largest parties on Tuesday and Wednesday.

Shasharin met the leadership and members of the Conservative delegation of the SKDL [Finnish People's Democratic League], Social Democrats and Center Party. The lectures were held in the Parliament building.

Parliament will probably receive a proposal in the fall for a nuclear-energy law now being prepared by the Government. According to plans, the law is supposed to be enacted before a decision is made on obtaining a fifth nuclear power plant. Besides the Soviet Union, France is also desirous of supplying a possible nuclear power plant to Finland.

Shasharin Emphasized Good Experiences

In his lectures, Shasharin told about the Soviet Union's nuclear-power experiences, which according to him have been very positive. He also emphasized that construction and development of nuclear power plants is proceeding full speed in the Soviet Union. Shasharin stressed that storage of nuclear wastes is no problem, rather, storage in bedrock or impervious ground is a safe solution.

The SDP [Social Democratic Party] delegation, among others, asked Shasharin whether there are differing opinions within the Soviet Union on the desirability of nuclear power. According to Shasharin there are, but after becoming acquainted with the facts even opponents have gladly gone to work in nuclear power plants.

Shasharin is considered specifically a nuclear-power expert. Has worked 15 years all together in nuclear power plants, among other places.

Shasharin did not meet with nearly all the opponents of nuclear power, because simultaneously with his lectures Parliament was continuing debate on Finland's development aid. Several members preferred to follow the debate on development aid.

Shasharin is a guest of the Finnish-Soviet Society (SNS). The meetings with the parliamentary groups, for example, were arranged through the SNS.

On Monday, Shasharin visited Tampere. He spoke there at the Technical College and the industrial committee of the Chamber of Commerce, among other places. Tampere is presently deliberating whether to rely in the future on Soviet natural gas or on peat.

On Tuesday, in addition to the Conservative parliamentary delegation, Shasharin met with Minister of Commerce and Industry Seppo Lindblom. On Thursday he will travel to Lappeenranta, and on Friday he will participate in a seminar on energy policy arranged by the SNS.

The Soviets have enlightened political decision makers on nuclear power earlier this year as well. In January the party leadership, parliamentary leadership, and district leaders of the Conservatives met in the Soviet Culture and Science Center to hear about nuclear-power matters as presented by M. V. Titov, who is responsible for commercial affairs in the Soviet embassy, and others.

9611

CSO: 5100/2553

DECISION ON FIFTH NUCLEAR REACTOR STILL YEARS AWAY

Helsinki HELSINGIN SANOMAT in Finnish 8 Mar 84 p 22

[Article: "Managing Director Krister Ahlstrom: Decision on Large Power Plant Cannot be postponed For Years"]

[Text] Managing Director Krister Ahlstrom, who is in charge of the "basic power project" which is trying to obtain a large new industrial power plant, was surprised by the statement on energy made Tuesday by (Social Democrat) Minister of Commerce and Industry, Seppo Lindblom. Lindblom said that the decision on construction of a large new power plant need not be made in the very near future, rather, there is time for additional clarification and dissemination of information for a couple of years.

Ahlstrom says that if it is decided to go with nuclear energy, then decisions should begin to be made quickly, and there is no "couple of years" time for clarifications.

In Ahlstrom's opinion, we should stay with the original position of both industry and the Ministry of Commerce and Industry, that the nuclear energy law should be brought before Parliament still this spring. Lindblom said on Tuesday that presentation of the law or Parliament would be postponed till fall.

In Ahlstrom's opinion, industry should start to ask for bids on a new nuclear power plant already during this year. And orders should be placed next year, as was the original goal, and not possibly in 1987, towards which Lindblom's schedule points.

Minister Lindblom based his opinions about a timetable on new growth projections made by the Ministry. According to them, annual economic growth would be less than earlier projections, only 1.5 - 2.5 percent, which would also mean less consumption of electricity than predicted before.

Ahlstrom is astonished by the Ministry's new growth predictions, and he cannot understand what they are based on. Industry's growth target, which Ahlstrom thought the Ministry had agreed to, is larger, 3 - 4 percent annually.

"With the mild growth planned by the Ministry, we will not be able to finance the kind of increased prosperity that all are striving for, as I understand it," said Ahlstrom.

Ahlstrom noted that in addition to the availability of energy, its cost is also important. "And keeping the cost reasonable requires reliance on nuclear power, at least at this moment.

"By postponing decisions, a great risk is being taken from the point of view of maintaining the ability of this country's industry to compete," Ahlstrom claims.

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CSC: 5100/2553

COGEMA ANNUAL REPORT FOR 1982

Paris COGEMA RAPPORT ANNUEL 1982, 28 Jun 83 pp 19-25

[Section of the General Nuclear Materials Company's annual report for 1982 dealing with nuclear fuel and reprocessing activities as presented at the regular annual stockholders' meeting on 28 June 1983]

[Text] Nuclear Fuels Division

The year 1982 was marked by the consolidation and organization of structural changes made in 1980 and 1981 in connection with the following:

1. Fuels intended for PWR reactors:

a) The agreements between COGEMA [General Nuclear Materials Company] and FRAMATOME [Franco-American Atomic Construction Company].

b) The establishment of FRAGEMA and the CFC as subsidiaries in partnership with FRAMATOME.

2. Acquisition of the SICN.

Fuel for Water Reactors

FRAGEMA and the CFC are general partnerships that were established in 1981 by FRAMATOME and COGEMA as equal partners, the purpose being to better organize their activity in a field that concerns both the boilermaker and the manufacturer of the nuclear cycle.

FRAGEMA's purpose is to design and market fuel for light-water reactors, and in 1982 it managed contracts representing the production of approximately 1,800 fuel assemblies (830 tons of uranium content) and 1,400 clusters.

The qualification program for advanced-type fuel (AFA), which is being carried out in cooperation with the CEA [Atomic Energy Commission], is in the completion phase and will permit the reloading of a power reactor with that fuel in 1984. With technical support from the CEA, FRAGEMA is also preparing for the use of

fuels utilizing gadolinium* as an integrated poison. Those fuels will be loaded into a number of assemblies in 1983.

The CFC, whose purpose is to fabricate fuel, continued construction work on its plant on the Pierrelatte site. The startup of that plant, scheduled for the start of 1984, will result in the industrial production of the first fuel reloads in 1984. The plant produces both standard fuel and advanced fuel (AFA).

Fuels for Breeder Reactors

In 1982, the Nuclear Fuels Division continued construction work on the first core for Super Phenix 1. Using fabrications from the SICN and AGIP-Nuclear [Nuclear Division of Italian National Oil Company], the dummy loading of that reactor took place in July 1982.

Completion of the fissile elements by the CEA Plutonium Shops in Cadarache, of the control assemblies by the SICN, and of the various measuring devices necessary for startup is at an advanced stage and should result in deliveries to the Creys-Malville site in September or October 1983. At the same time, an agreement has been signed with NOVATOME and NERSA covering planning for executing the first two reloads, and procurement of the necessary supplies has started.

Thought is already being given to the post-Super Phenix program, and in that connection, COGEMA continued its preliminary planning for a plant to fabricate fuel for breeder reactors (the FOR project). This phase of planning should be completed in the first half of 1983.

Fuel for Natural Uranium, Graphite-Moderated, Gas-Cooled Reactors

In 1982, COGEMA supplied the EDF [French Electric Power Company] and the French-Spanish HIFRENSA [Spanish-French Nuclear Power Corporation] with 300 tons of standard fuel (for use at Chinon 2, Chinon 3, Saint-Laurent 2, and Vandellon) and 145 tons of fuel for Bugey 1, to which was added G3 fuel from Marcoule.

The corresponding fabrications were provided by COGEMA's usual suppliers, primarily its subsidiary the SICN, Cezus, Lorraine Carbon, Union Carbide France, and the Bologna Ironworks.

SICN Activities

As a result of the gradual winding down of the fabrication program for graphite-gas reactors and the drop in activities related to breeder reactor fuel in connection with delivery of the first core for Super Phenix 1, the SICN made a sizable effort in 1982 to consolidate its diversification activities and develop new fabrications. The following should be noted in particular:

* Gadolinium is used in the fuel as an integrated poison to control reactivity. It permits an increase in specific burn-up and a lengthening of fuel cycles.

At the Annecy facility:

The start of industrial production at a plant manufacturing camshafts for diesel engines and an increase in quartz crystal production.

At the Veurey facility:

The start of a new activity for the production of industrial diamonds.

For the above purpose, COGEMA gave the SICN responsibility for executing the terms of the licensing agreement signed in 1981 between its subsidiary MINERSA and the American Megadiamond firm. A production facility is now being equipped in Veurey. The first press was installed in 1982 after the personnel had gone to the United States to learn the technology. The first synthetic diamond powder was produced in December 1982.

Reprocessing Division

Under the terms of contractual agreements, the Reprocessing Division is responsible for reprocessing spent fuel from the EDF's nuclear power plants and for foreign customers. It also handles the transportation of that fuel between the reactors and the reprocessing plants in La Hague and Marcoule. It is also responsible for the production of plutonium for the Ministry of Defense at special facilities in Marcoule.

This division is also acting as principal in the expansion work underway at the La Hague facility.

La Hague Facility

1. Plant Operation

The La Hague facility continued in 1982 to reprocess spent fuel from the gas-graphite and ordinary water reactors. The quantities of that category of fuel increased considerably. During 1982, the following quantities were reprocessed (in tons of heavy metal--that is, uranium before irradiation):

From EDF power plants using the natural uranium, graphite-moderated, gas-cooled [UNGG] system: 226.1 tons.

From various power plants using ordinary water: 153.5 tons.

In 1982, the plant reprocessed fuel from an EDF ordinary-water reactor (at the Fessenheim power plant) for the first time. The operation took place in very satisfactory technical conditions.

The good results that were achieved prove that the UP_2 plant will be able to reprocess about 250 tons of fuel from ordinary-water reactors annually when it is no longer processing fuels from other types of reactors.

It should be noted, however, that despite the 14-percent increase in the irradiation energy of fuels reprocessed in 1982 ($4,078 \times 10^3$ MWJ) as compared to 1981, the radiological activity of wastes in 1982 was kept at a level comparable to that in 1981 and remained far below the levels authorized by decree. Moreover, the average annual dose received by the personnel directly involved dropped between one year and the next: from 235 mrem per year in 1981 to 215 mrem per year in 1982.

Those results reflect the efforts made to improve operating and maintenance safety in the facilities.

2. Plant Expansion

Following the energy debate in Parliament in October 1981, the authorities authorized COGEMA to continue construction work on the UP₂800 and UP₃ plants in La Hague. As has already been mentioned, that decision was confirmed at the start of 1983 following the conclusion of the first phase of work by the scientific committee headed by Professor Castaing. As far as the engineering is concerned, the SGN firm of industrial architects (and prime contractor) continued its detailed design work for the UP₃ plant's various shops during 1982. The final touches are being put on those designs in cooperation with COGEMA.

Work on the detailed design of the various plants constituting UP₃, part of the UP₂800 unit, and the facilities shared by those two plants was therefore actively pursued in 1982 by the SGN as prime contractor in cooperation with TECHNICATOME, USSI, and TECHNIP. In the course of 1982, 2.5 million hours of engineering were devoted to those plans.

The actual work was essentially resumed in the spring of 1982 in accordance with the government's instructions. It was concerned primarily with the following:

1. Construction of new facilities for concentrating and storing fission products as well as converting and storing plutonium.
2. Construction of Pool C (2,000 tons), work on which progressed very normally with a view to placing it in service toward the end of 1983.
3. Civil engineering work in connection with the new Pool D (2,000 tons) and the To dry discharging shop. This work began in 1982.
4. Construction of the new liquid waste treatment station (STE3), which was started in 1982, as was site preparation work for the UP₃ plant's various shops. The latter consisted of earthwork for the building sites and approaches, excavation for the foundations of some of the shops, and the construction of temporary on-site facilities for the industrial architect and prime contractor (the SGN) and the various contractors.
5. The start of construction on the UP₃ complex with the startup of work for the T₂ high activity shop.

6. In addition, and in cooperation with local and departmental authorities, a number of miscellaneous operations relative to amenities as provided in the "Major Worksite" procedure adopted for the expansion of La Hague were undertaken. They are concerned primarily with facilities for the workers from outside and their families and with improvements to the road system.

In total, as of the end of 1982:

An amount of 5,266 million francs had been earmarked for expansion of the two plants, and 3,092 million francs had been paid out.

Manpower on the worksite totaled 2,100 persons, and their number was continuing to increase at the start of 1983.

Marcoule Facility

As in previous years, the Marcoule facility operated the UP₁ plant in Marcoule and the plutonium-generating reactors and provided support for the units set up by the CEA.

Operation of the Celestin reactors in 1982 does not call for any special comment. As far as the G2 and G3 reactors are concerned, the CEA-UDIN [Central Unit for Downgrading of Nuclear Installations] took over as operator of the G2 reactor on 1 February 1982, COCEMA-Marcoule having completed its work for the permanent shutdown of that reactor as planned with the approval of the IPSN [Nuclear Safety Protection Institute], the agency concerned with safety. The G3 reactor underwent major maintenance in the middle of 1982 in preparation for beginning a new operating cycle.

The UP₁ plant and its associated decladding shop were responsible in 1982 for the reprocessing of the following:

1. Spent fuel from the EDF's UNGG reactors: 113.6 tons.
2. Spent fuel from the UNGG reactor in Vandellós, Spain and the fuel from reactors supplying the plutonium required by the Ministry of Defense: 189.4 tons.

Once again in 1982, it was confirmed that the pace of reprocessing operations depends on the operation of the mechanical decladding shop. For that reason, the Marcoule plant made every effort to prepare as well as possible for the active startup of the new MAR-400 unit for storing and decladding spent fuel.

In addition to improving operating conditions, that facility will enable the plant to process containerized fuel from the EDF's UNGG reactors at Chinon, something that is not possible at present.

The Marcoule vitrification shop, which is still attracting considerable international interest, produced 179 containers of glass in 1982, corresponding to 135 cubic meters of fission products.

Lastly, work to establish an investment program spread over several years and intended to renovate the plant's production and support facilities continued during 1982, with special attention being paid to the layout of the new liquid waste treatment station.

Transportation of Spent Fuel

As regards the transportation of spent fuel--the tonnage of which, in the case of fuel from ordinary-water reactors, is increasing steadily--1982 was marked by two important events:

1. The opening on 4 May 1982 of the new railroad terminal in Valognes. The result is that packages of spent fuel shipped by rail can be routed from there to La Hague by truck. Designed to meet the future needs of La Hague, this new terminal makes it possible to avoid handling those packages in Cherbourg's immediate suburbs and to reach La Hague by a route that avoids all urban areas.
2. The launching on 3 May 1982 and commissioning in November 1982 of a ship named the "Sigyn." It was built by the Le Havre Shops and Shipyard with financing by Sweden's SKBF [Swedish Nuclear Fuel Supply Company]. The ship, which has a French crew, will carry spent fuel from Swedish nuclear power plants to the port of Cherbourg.

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GREECE

NEW URANIUM DEPOSITS, OTHER ORES

Athens MESIMVRINI in Greek 24 Feb 84 p 9

[Text] Salonica--Northern Greece has a gold mine of deposits, and every so often new deposits are located. The most important deposits are those of lignite and uranium. Within 1983, new deposits of lignite in the areas of Serrai, Drama, and Proastion of Ptolemais were revealed, and also discovered were low-enthalpy geothermal fields in Nea Kessani of Xanthi, Lithotopos of Serrai, and Lekani of Lygdonia. At the same time, the uranium reserves in the area of Paranestion were enlarged to 400 tons, from the 115 tons which they totaled at the end of 1981.

These data were revealed by the general director of the IGME [Institute for Geological and Mineral Research], Dr K. Papavasileiou, at the chemical laboratory of his school of physics and mathematics. On the occasion of the events taking place in "Geology Week," there was further reference to the explorations being conducted by the IGME in northern Greece for the following ores:

Chromites: In the area of Vourinos of Kozani, aimed at discovering such deposits, because of which within 1983 we have located 2.5 million tons of chromite with a chromium-trioxide content of 25 percent.

Gold: The explorations are located in the areas of Makropotamos of Komotini and Kheimarros in the nome of Serrai. In 1983 we saw a significant increase in reserves in both of these areas. Specifically, in the area of Makropotamos of Serrai we had an increase in reserves of C2 gold from 1,900 kilograms to 2,050 kilograms, and a change in C2 reserves to C1. Thus, today the reserves are C1--1,500 kilograms of gold and C2--2,050 kilograms of gold. In the area of Kheimarros of Serrai, within 1983 the reserves of gold in the C2 category roughly doubled, and at present they amount to 1,700 kilograms.

Mixed lead-zinc sulfide deposits: During 1983 there was a significant intensification in the primary exploratory operations for mixed lead-zinc sulfide deposits (Myloi-Polykastron-Aisymi-Thasos).

The objective is to provide future support for the announced lead-zinc sulfuric and phosphoric acid metallurgical facilities, given that for the first 10-15 years the existing reserves in the Kassandra-Stratonion mines

of Khalkidiki (Bodosakis) fully meet the needs of metallurgy. In summary, the following reserves were found to exist, according to region:

- a) Polykastron: The operations which continued at Polykastron increased the degree of certainty of some of the deposits. Thus, as of 1983 we have reserves on the order of 3.5 million tons.
- b) Thasos: In Thasos the various exploratory operations, which were at an advanced stage, led to an increase in reserves by 800,000 tons in 1983.
- c) Western Thraki: In the area of Myloi of Aisymi, recently a very interesting massive and stratiform mixed-sulfide ore-bearing matrix was discovered. At the same time, within the framework of a project which is receiving 50 percent of its financing from the EEC, in 1983 explorations began aimed at making discoveries and evaluations in a region of particular mineralogical interest, above all with respect to mixed lead-zinc sulfides, in the greater area of the Rodopi matrix in western Thraki.

Industrial minerals-marbles: Within the framework of the recent explorations by the IGME for industrial minerals, in 1983 these explorations led to the discovery of deposits of special clays (Khalkidiki) and of disaggregated granites in the area of Sithonia, from which it would be possible to produce quartz sands and feldspar-based products which are imported at present.

Manganese deposits: For the current year, plans made in cooperation with the ELEMVE [Greek Industrial and Mining Investments Company] provide for the very promising intensification of explorations for manganese ores above all in the area of Neokhorion in the nome of Khalkidiki. From the data we have up to now, it is calculated that the probable reserves are on the order of 100,000-150,000 tons of ore containing 15 percent manganese.

12114

CS0: 5100/2554

AGENCIES APPROVE SEALED STORAGE OF NUCLEAR PLANT WASTE

Stockholm SVEISKA DAGBLADET in Swedish 24 Feb 84 p 6

Eliminates Need for Processing

[Article by Bo Ostlund: "SSI and SKI About Nuclear Waste: Yes to Final Storage"]

[Text] "This is the final body to which the proposed measures have been submitted for approval," said director general of the Nuclear Power Commission (SKI), Olof Norlander when he and his colleague Gunnar Bengtsson of the Radiation Protection Institute (SSI) last Thursday could disclose that the managements of SKI and SSI had approved the method submitted by the nuclear power industry for final storage of nuclear plant waste, by KBS-3 [Nuclear Fuel Safety-3].

The go-ahead from SKI and SSI is supplemented by almost 20 other proposals and all, barring a few exceptions, among them the Conservation of Nature Department, approved the KBS-3 method.

The objections from the Conservation of Nature Development mainly concern the downward limits for preserving living organisms. The department maintains that KBS-3 is concentrating on human beings and fails to take into account the problems that concern, for instance, organisms living underground.

C [Center Party]--No 1

The management of SKI contained one dissenter--the Center party member Karl-Erik Olsson, who thinks that the welding methods used to seal the copper capsules in which the spent fuel rods are to be encased, are not tested enough.

C [Center Party]--No 2

The Center party member Birgitta Hambræus of the management of SSI, registered a reservation in the same manner. Hambræus wants the nuclear industry to carry out a test 'for real.' She wants waste from the old Agesta reactor (which handled the district heating for south Stockholm in the 1960's) to be encased and to be placed in a rock cavity in a full-scale test to see if the method passes muster.

With this decision now made last Thursday by SSI and SKI, the government is free to grant permission to start up Forsmark 3 and Oskarshamn 3, the last reactors in the current nuclear program to be put into operation.

According to the new nuclear regulation--which allows direct storage without the need for processing--a research program is also required.

The research program will be given to the authorities for examination later on this spring.

'But we can still approve the method demonstrated here by the nuclear power industry through SKEF [Swedish Nuclear Fuel Resource Corp],'' says Olof Homaner of SKI to the SVENSKA DAGBLADET. 'There is plenty of time to refine the research efforts in those areas where we, in cooperation with the industry, may find a need for more profound scientific analyses.'

There is lots of time--from now it will be 40 years before the first waste will be lowered to a depth of 50 meters into the bedrock, encased in a copper capsule with a thickness of 10 centimeters, with this further encased in bentonite clay placed in a sealed rock cavity. During these 40 years, the waste will decay to manageable radiation levels and temperatures in CLAB [Central Storage Corp], the central waste storage facility which will be ready in Oskarshamn in 1985.

But even then it is not certain that the storage will be carried out according to KBS-3. The method demonstrated there--which has received scientific approval and maybe later also political--may be further refined, depending, among other things, on what the research program may discover.

Rock Burial Method Illustrated

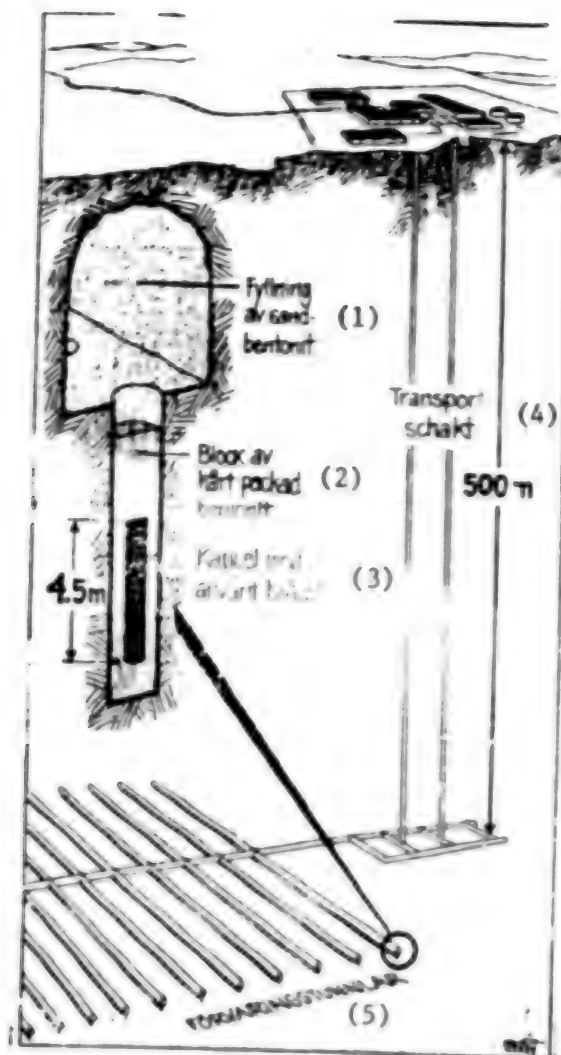
Stockholm SVENSKA DAGBLADET in Swedish 23 Feb 84 p 6

[Text] Positive Answers to Proposals Expected. Nuclear Waste in Bedrock for a Million Years.



CAPTION

Work is continuing 350-500 meters underground on direct storage of nuclear waste without processing according to the so-called KES-3 method. Its function is illustrated in the adjacent drawing. As of now this is only applicable to a research installation in Bergslagen. Where, if and when another installation will be built still is not decided.



Key:

1. Filling of sand bentonite
2. Block of hardpacked bentonite
3. Capsule with spent fuel
4. Transportation shaft
5. Storage tunnels

CAPTION

The nuclear fuel rods are encased in copper capsules which are then pushed down into lots of vertical holes which in turn, like the teeth on a comb, protrude from the horizontal transportation tunnels.

Should Ease Reactor's License

Stockholm SVENSKA DAGBLADET in Swedish 25 Feb 84 p 2

[Editorial: "Well Thought Out Nuclear Power"]

[Text] The Nuclear Power Commission and the Radiation Protection Institute have now approved the nuclear power industry's method for storage of nuclear waste. This was the prerequisite for the government to allow the last reactors to start up in the series of twelve, that we according to popular vote and parliamentary resolution are supposed to stick to.

It is typical of this controversy that so little noise is generated by these resolutions about approval. The handling of the start up request and the scrutiny of storage projects were, in their time, the very climax in the infected debate about nuclear power and they were the factors that led to the crack-up of the first three-party government in 1978.

The disputes about nuclear power certainly caused a good deal of misery both political and economic. But even the most ardent adherent of nuclear energy must admit that one advantageous consequence has resulted from the enormous convulsions. The political oppositions resulted in an impressive review and research concerning the safety of nuclear power and especially concerning the storage of waste.

The Nuclear Power Plant Act which ruled that permission for start up could only be given if the nuclear power industry could demonstrate how a "completely safe" method of storage could be arranged, was certainly not very reasonably formulated. But it got work started on the questions of storage that now have shown to be exceedingly fruitful.

The Nuclear Power Plant Act is now replaced by new regulations, but the spirit is the same in principle. It is the duty of the nuclear power industry to devote the greatest possible effort towards preparing a safe final storage of the spent fuel.

The industry has taken this very seriously. KES-3 is the name of the method that now has been approved. This is not the place to enter into its technical construction. What can be established is, that the method is a manifestation of collected knowledge from several scientific fields from nuclear physics to geology. The project has been the object of great international attention and international reception of the proposal has been favorable.

There exists here a degree of safety which meets almost unimaginably high requirements. All future generations are definitely to be protected from injuries. The Swedish view of these questions is also new in principle. Here it is decided from the beginning that, if one uses a technology, the consequences are to be investigated and every step through the whole cycle is up to its literal disappearance from the face of the earth has to well thought out.

The responsibility for this has been placed on those who produce the nuclear power. The entire cost, that is to say not only the production costs but also the cost of the consequences, will be borne by those who use the energy produced by the nuclear power. It is we who use the electricity today, who finance the final steps by paying taxes on the electricity.

The advantages we derive from the nuclear power will not be paid for by coming generations, but by us. As we all know, all human enterprises are not this ethical.

12339

CSO: 5100/2550

BRIEFS

NUCLEAR FUELS STAFF CUTS--British Nuclear Fuels, the State-owned company, is planning cuts in its 16,500 staff, but is increasing capital investment to cope with extra business. Unions have been told that manpower will be cut significantly over the next decade. They are also being urged to help the company regain public confidence and restore support for nuclear power. Company officials said yesterday they could not give details of staff reductions, but figures given to unions suggest cuts could be about 15 percent. Fewer staff will be needed because of productivity improvements, a reduction in the number of management levels and "increased individual accountability." The company is planning to increase capital investment over the next 10 years to £4,000 million with much of it concentrated at Sellafield, Cumbria. The winkle pickers of Sellafield have been given the all clear from nuclear pollution experts. Dr John Hunt of the Ministry of Agriculture's fisheries laboratory in Lowestoft, said: "The additional risk to these communities, which eat such large amounts of seafood like winkles, is equal to smoking one cigarette a week or driving 50 miles. It is very small." [Text] [London THE DAILY TELEGRAPH in English 11 Feb 84 p 2]

CSO: 5100/7516

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